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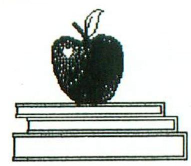
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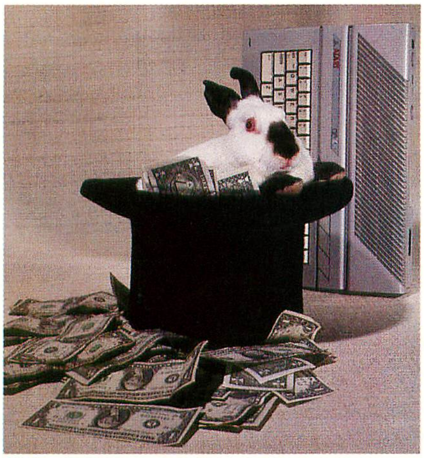
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MORE MAKEBOOT DOS

I noticed that OS/A+, a discontinued DOS once available from OSS, was required to use the program MAKEBOOT.EXE in *Customizing the Atari Operating System Device Handlers: Part II* from **Antic**, May, 1989. The section labeled "OS/A+ Version" only changes MEMLO and prints a message, which is certainly not a DOS-specific thing.

The problem is that the program does not relocate to sit on the old MEMLO, but starts instead at $2100. When the DOS 2 DUP.SYS is loaded, MEMLO is ignored, and in this case DUP.SYS would overwrite the program. OS/A+ is completely memory-resident, loading no utility package from disk. So this is not a problem.

Also, the program does not contain a RUNAD or INITAD segment, so, if loaded from DOS 2, it would not run. OS/A will load a file with a .COM extender and begin execution at the beginning of the first segment. Once renamed, this program will work properly. The article did not mention that the program must be renamed "MAKEBOOT.COM." These are the only problems I found, and I realized that there was no reason the program should not work properly with DOS XL (another discontinued DOS once available from OSS) as well as SpartaDOS (currently available from ICD, Inc.) since these share the necessary traits.

I tested the program with SpartaDOS 3.2 and SpartaDOS X and had no problems. It should be noted that with SpartaDOS X the handler is not available from the command processor, but is available from an application. Also, users should check the value of MEMLO before loading the program to insure that it is below $2100. Adding RAMdisk handlers and/or R: handlers could boost MEMLO above this value.

Assuming these are the only conflicts with Atari DOS 2, it should be possible to modify the program to work with DOS 2. It may already work with DOS XE with an appropriate run segment added.

Craig Thom
Rockford, IL

Mr. Thom works for ICD, but wants it understood that he is writing here on a strictly personal basis, not as a representative of ICD. Still, he certainly knows his assemblers and DOS.—ANTIC ED

CRIBBAGE HELP!

We've been hearing from readers about our game *Cribbage Atari*, which ran in the May, 1989 issue. As it turns out, the game does not run properly on an 800, nor apparently on a 1200XL. Unfortunately, the Technical Editor who worked on the program didn't know how to play cribbage, so he never played long enough on his 800 to realize there was a problem. The testers in our office used a 130XE and an 800XL and had no problems whatsoever. If anyone has been able to fix the problem, please let us know how you did it!—ANTIC ED

ERROR CODE CONFUSION

Whenever an error code comes up I have to stop, look up the code number, and try to figure out what it means. Maybe you could run some articles on error codes, what they mean and how to handle them.

Rodney Gore
Layton, Utah

For BASIC programming, Electric Charlie *by Patrick Bass (**Antic**, February 1987) gives detailed error messages in pop-up windows, so at least you don't have to keep looking up the numbers every time. For a guide to error trapping in your own programs, see Heidi Brumbaugh's* Error Trapping in Atari BASIC *in the February 1989 **Antic**.*

Figuring out what a particular error means for the program you're working on is NEVER easy. One error number can apply to several different situations, so there's no way to get a definative analysis of an error. Also, error messages are often actually triggered by other problems occurring elsewhere in the program.—ANTIC ED

BAD KITTY

While playing *Escape From Dispozon* (March and April, 1989) I found an error. When I got to the island with the box and kitten, I couldn't get the kitten. Instead, I got the death routine you get when the crabs get you. How do I fix this?

Ethan Frolich
West Palm Beach,
Florida

There is a problem, but you don't have to fix it to play the game successfully. Touching the kitten is supposed to be fatal—you're just getting the wrong death routine. Try luring the kitten with sardines, instead.—ANTIC ED

FARMERS UNITE

I agree totaliy with Lee Jones' letter in the July **Antic**, calling for an Atari Farmers and Gardeners Users Group. As a farmer, I am apalled by the lack of agricultural software for Atari 8-bit computers. That's one reason I wrote my *Customer List Manager*, a simple database designed to keep yearly histories of orders. By changing the fields, this database can be used to track the performance of crops, weed and insect problems, and pesticide applications.

Thomas Andrews
Manlius, NY

***Antic** welcomes your feedback, but we regret that the large volume of mail makes it impossible for the Editors to reply to everyone. Although we do respond to as much reader correspondence as time permits, our highest priority must be to publish I/O answers to questions that are meaningful to a substantial number of readers.*

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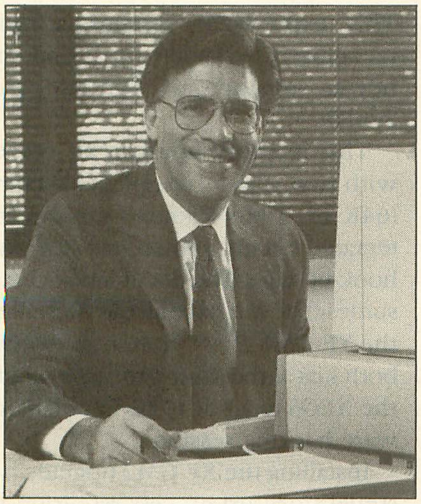
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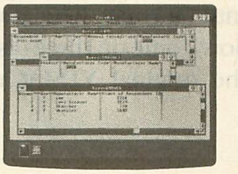
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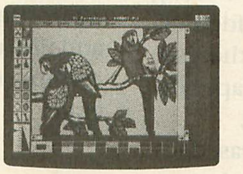
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YEMACY B/4

Electronical Software
P.O. Box 1106
Taylor, MI 48180.
$29.95
Review By Stephen Fishbein

Mention of **YEMACY B/4** in the February 1989 **Antic** review of the Star NX-1000 Rainbow printer prompted me to order a copy of this color printing utility from Electronical Software. With the latest improvements in this handy program, as well as availability of color printers at much lower prices than ever before, YEMACY B/4 has become an essential program for color printing.

The original YEMACY program was released in 1986. It permitted four-color printing on ordinary printers by changing ribbons and re-positioning the paper. The method provided excellent printouts as long as the user was careful in lining up the paper for each additional printer pass.

YEMACY B/4 was later released for use with the Epson JX-80 and compatible color printers such as the Rainbow 1000. That version provided an excellent printout as well as several utilities.

However, limited color printer sales resulted in little interest in YEMACY B/4 and Electronical Software had actually closed down. Then the **Antic** review of the NX-1000 Rainbow created a new interest in color printer dumps and encouraged programmer Michael Clayton to add major improvements which were recently completed.

Clayton concluded that existing four-color ribbons failed to print true colors. Whether it was lack of ink on the ribbons or the limited drying time allowed before additional colors were added, Clayton's solution was to allow up to nine additional print passes per color. In most cases two or three passes will provide very satisfactory coloring. The resulting printouts feature deep, rich colors, instead of the pale, washed-out look of single-pass prints.

The most recent revision of YEMACY B/4 also includes a "poster" program. Color pictures may now be enlarged two or three times and printed out on as many as nine sheets.

Several utilities have also been added since the original YEMACY program was released three years ago. A text editor makes it possible to add text to graphics, using any of the nine-sector Atari fonts. You can design and print borders around your YEMACY prints, color data may be changed and the print palette may be customized. Most important, a utility is included to convert graphics to the widely used Micro-Painter format. The program and files now come on three disks, including the original YEMACY program.

RAMdrive + XE-GM2, RAM-Aid

(For Atari XEGS)
Innovative Concepts
31172 Shawn Drive
Warren, MI 48093
(313) 293-0730
Review by Matthew Ratcliff

RAMdrive + XE-GM2 ($34.95) is the sequel to the XE-GM1, reviewed in the August 1988 **Antic**. The XE-GM2 boosts the Atari XE Game System's 64K memory to a full 192K, enough bytes to copy a single-sided double density disk (SS/DD) in a single pass. This extra memory is ideal for user group library managers who need to make a lot of disk copies at a meeting in a short period of time. This extra RAM is automatically recognized by PaperClip II and the newer versions of SynCalc and SynFile+.

This memory upgrade kit comes with two 41464 dynamic RAM chips (64K by 4 bits wide), a custom integrated circuit, switch, resistor, and hook-up wire. The documentation assumes that you have already installed the XE-GM1. If not, you should order both kits at the same time to upgrade the XEGS to a full 192K in one hardware hacking session.

Installing the XE-GM2 upgrade is a straightforward process requiring 17 steps. The new RAM chips must be soldered piggy-back on the XE-GM1 chips, which are on top of the original pair. This stack fits snugly in the case when the XEGS is reassembled. A 256K upgrade probably would not fit.

If you have the XE-GM1 upgrade already in place, adding the XE-GM2 is very simple. Only one wire must be removed from the first upgrade to make room. I had no problems with the installation, following the step-by-step instructions to the letter. With the proper tools as described in the instructions, this upgrade should take about an hour to complete.

The "select line" that enables this additional 64K of RAM is used in the XEGS to control Missile Command. An optional switch may be wired into the project to allow use of the game. In this mode your XEGS has only 128K of RAM available. But if you are playing Missile Command the extra RAM is idle anyway. I installed the switch with no complications.

The upgrade is accompanied by a very nice RAMdisk and memory test utility disk. A brief overview of the files accompanies the instructions. RAMdisk handlers for a disk designation of D2: through D7: are included,

as well as Atari's D8: handler for DOS 2.5.

Documentation files, suitably formatted for copying to the printer, are included to help you get the most out of your 192K of RAM with SpartaDOS, MYDOS, and AtariWriter Plus. A sector copy utility called MyCopyR!, version 2.1, rounds out the utility package. This program can duplicate single, enhanced, or double-density disks in a single pass on a 192K equipped XEGS.

RAM-AID

One minor problem occurs when all that RAM is added to an XEGS. When you turn the computer off and then on again quickly, the XEGS may fail to reboot. The extra RAM tends to retain its memory, preventing the XEGS from cold starting as expected.

To get around this problem, SpartaDOS users may simply issue the COLD command. Unfortunately, this doesn't work if the computer locks up or if you are using certain applications software. When you must wait 10 to 20 seconds between turning the computer off and on again to get a reliable reboot on the XEGS, these RAM upgrades can get a bit frustrating.

Innovative Concepts has come to the rescue with their **RAM-Aid** ($19.95). This device has been available for the 800XL and 130XE computers for a while. The instructions have been expanded to cover installation in the XEGS. The drawings for the XE-GM2 upgrade also demonstrate Ram-Aid connections.

This project will add only a few minutes to your RAM upgrade time. There are a few wires, a very small circuit, and a red pushbutton to hook up. A 1/4 inch hole must be drilled in the side of the XEGS, above the joystick ports, for the RAM-Aid reset button. I had no problems getting it installed, following the concise 12-step instructions.

Operation is quite simple. While pressing the RAM-Aid button, you press and release the [RESET] console key. Then release the RAM-Aid button to get a picture-perfect cold start, every time.

I did find that, when in the "128K mode", RAM-Aid had a minor problem. Mark Elliott of Innovative Concepts explained that there was a conflict with the operating system software that handles the [RESET] key, Missile Command, and the self test software. I did find that power cycling right after the unsuccessful restart with Ram-Aid would generally result in a proper cold start. Normally the XE-GM2 switch will be in the 192K mode, where the Ram-Aid functions properly.

Ram-Aid and the SpartaDOS X cartridge do not cooperate well. When the Ram-Aid reset is initiated, it seems that the SpartaDOS X cartridge becomes completely disabled, and the disk-based DOS will boot.

SpartaDOS X is a very sophisticated "smart" bank-switching cartridge, but seems to become disabled by certain software when [RESET] is pressed. I have had this problem with quite a few programs that do not exit gracefully to DOS. This seems to be associated with SpartaDOS X and not Ram-Aid. If you are a SpartaDOS X user, you may find using the [RESET] key and the SpartaDOS X "COLD" command to be more reliable.

The XE-GM1, XE-GM2, and RAM-Aid upgrades have given my XE Game System more power than an Atari 130XE. The instructions are well-written, and the memory test and RAMdisk utilities put that new memory to work right away. But remember, you are on your own when "hacking hardware". Open the XEGS and start soldering, and your six-month Atari warranty is null and void. But if you are up to the challenge, Innovative Concepts has the products to pump up the power of your Atari XEGS.

P.O.S. NET SYSTEM

Xenia Research
P.O. Box 4675
Federal Way, WA 98003
CompuServe ID: 71310,605
$189, 128K disk
Review by Matthew Ratcliff

P.O.S. Net stands for Point of Sale Network, a computer-based sales system designed to help run a small business by combining elements of a cash register with inventory and accounting. The complete P.O.S. Net package ($189) includes two software products and a bar code reader for data entry. However, the elements of the package are available in various combinations from manufacturer Scot McGowan's Xenia Research.

In its simplest $69 form, P.O.S. can be used as a cash register. One of the pins on an Atari joystick port can be used with the software to control a cash drawer that's also available from Xenia Research.

We were not able to fully set up a business to test run the software in depth, but the demonstration program that came with our review copy was quite impressive. The documentation is a little difficult to follow, presented in a set of five small booklets. A single volume with table of contents and index would have been preferable.

The software includes a pre-configured database with fields for a four-digit item number, *product* description, quantity, and cost per

item. Sales tax may be specified by the user, after which it is calculated automatically for all sales. Some items may be designated as tax-free, such as newspapers or medicine. Tax laws vary from state to state, and the ability to control this automatically from P.O.S. Net is a very useful feature.

If you do not recall an item's product number, P.O.S. Net will search its database for the name you specify. After the sale, quantity is automatically updated.

With the bar code handler/reader you can print your own descriptive labels for your products along with a bar code and product number. Then you just run the bar code reader across the label to enter the sale in an instant. I found that the bar code reader worked quite well, even on bar codes made with a faded printer ribbon.

An Atari CX-85 keypad comes with the package. It serves to enhance the speed of data entry, and also as copy protection for the software. You can back up the program disks, but P.O.S. Net will not run unless the keypad is plugged into the machine.

The customer's name, address, and phone may also be entered as part of the sale. The customer information is not part of the database, however.

A report generator is available from the management menu. Here all out-of-stock or low-stock items may be listed or printed, resulting in a complete order summary. The report generator may also be used to print a catalog of your product line, by item number or alphabetized item names.

The reports may be used to track the sales rate of a particular item or even the sales performance of an employee, since an employee number may be associated with each sale if desired. These reports are protected by a security code access, so the boss can protect sensitive data.

P.O.S. Net supports up to seven additional terminals which are connected to the host computer through the Micronet adapter from Supra (not included with P.O.S. Net). This box allows multiple Atari computers to share the same set of peripherals automatically (no manual switching required).

XR-100 SOFTWARE

The XR-100 software enables you to develop your own applications with the bar code reader. Extensive BASIC program examples are provided in the manual.

The XR-100 software loads a special handler into the K: device driver of your computer. It constantly monitors the bar code reader in joystick port 1. When the reader is passed over a "modified code 39" bar code, the software deciphers the black stripes into their proper values.

This data is then presented to the computer as if it were typed from the keyboard. This allows you to use the bar code for data entry at any place a program expects keyboard input from the K: device. The codes can be from one to four digits (or characters) long.

However, this device cannot read UPC (universal price code) symbols like those you find on all your groceries. The UPC code format is far more complicated to read than the "modified code 39". The bar code reader has a simple LED for data detection, while grocery store scanners must use lasers for reading.

OTHER USES

What good is the XR-100 software and bar code reader? It can be used to help organize just about any collection. You could write a program to maintain a database of a book or record collection, for example. Xenia Research provides a Contest Bar Code program with the XR-100 package. Bar codes may be printed as "tickets" for a contest entry, for your user group's monthly door prize, for example. The contestants have their bar codes read on the way out of the meeting, and the winner will be detected automatically.

The bar code reader that came with P.O.S. Net is made by Radio Shack. The part number is 26-1183. It was made for the Tandy Model 102 laptop computer. Its connector is a DB9 joystick type, compatible with the Atari 8-bit. If you purchase a bar code reader from Xenia, it comes preconfigured for the Atari.

However, you may wish to purchase your own bar code reader from Radio Shack. Some wires must be moved, but the connector is easily disassembled so the black wire can be moved to ground, pin 8. The red wire goes to +5 volts, pin 7. The white wire goes to the trigger input, pin 6.

P.O.S. Net requires a lot of Atari power to run. It seems well-suited to a small business operation. The user interface is very well done, for all components of the software. The documentation is rather brief, and it does seem to concentrate more on the technical aspects than the basics of operation. If this specific application is not for you, then the XR-100 package will provide the tools to create your own custom bar code application.

SYSTEM REQUIREMENTS:

128K or larger XL/XE computer (64K XL/XE computer may be used as terminal 2-8)

Supra Micronet, if more than one terminal is desired

Double density disk drive (XF551 or doubled density 1050)

Epson-compatible printer
Optional 1020 printer

XR-100 & BAR CODE REQUIREMENTS:
48K Atari computer
Atari 810, 1050, or XF551 disk drive
Epson-compatible printer

PRICES:
P.O.S. Net software $69
XR-100 software & manuals $69
P.O.S. Net, bar code handler $99
P.O.S. Net, bar code handler, XR-100 software & manuals $125
XR-100 software & manuals, barcode reader $179
P.O.S. Net, barcode handler/reader, XR-100 software & manuals $189

THE CONVERTER

No Frills Software
800 East 23rd Street
Kearney, NE 68847
(308) 234-6250.
$21.95, 48K disk
Reviewed by Chester Cox

Atarians have so many choices when it comes to printing utilities—and we're *still* not satisfied. We want to use Print Shop icons in Print Power or Newsroom. News Station lets us use KoalaPad or Print Shop pictures, but we want to include Print Power or Newsroom pictures also. *Newsroom Converter* in the December 1988 *Antic* lets us put Graphics 8 or Print Shop pictures in Newsroom, but it still doesn't go far enough.

The folks at No Frills Software evidently felt the same. **The Converter** by Chris Wareham connects Newsroom with Print Shop with Print Power with AwardWare. In so doing, it also provides utilities which the original programs lack.

Primarily, the Converter will read pictures (Let's call them all pictures, and dispense with "icons," "clip-art," or what have you.) from Print Shop, Print Power, or AwardWare, and saves it in either Newsroom photo, AwardWare graphic, or AwardWare seal format.

It will permit you to format a disk in Newsroom format if you have a 1050 or compatible drive. It'll let you view the directory of any of the above-mentioned formats, and let you view the pictures on the disks. It will even let you use more than one drive—an obvious requirement which too many programs omit.

For Print Power users, the Converter opens up a large range of possibilities. The Converter will convert AwardWare graphics or seals (those *little* pictures) quickly, as well as convert Print Shop icons, to Print Power. Even better, the Converter's editing features permit us to finally create our own Print Power pictures, or to edit existing ones. Print Shop owners might find the editing features useful—it's more powerful than Print Shop's own drawing feature.

Fortunately, the Converter is extremely easy to use. I say "fortunately" because the documentation is extremely difficult to read. When they call themselves "No Frills," they aren't joking. The documentation is faded photocopying. No Frills offers extremely low prices (their disks start at $2) and large royalty percentages to their authors—one tradeoff is inexpensive manuals.

No Frills also offers many, many disks of Print Shop graphics, fonts, and borders. My newsletters, notices, and signs have become locally famous around the Denver area. This is especially remarkable when I reveal that my ability to draw a straight line is nil.

Does the Converter do everything? Not quite. I still want to convert some Newsroom pictures to Print Power or Print Shop, and would like to convert Print Power to Print Shop icons easily. The freedom this would allow me when using News Station (which accepts Koala pictures *and* Print Shop icons) would be thrilling. No Frills anticipates a "Converter Companion" in February which will enable exactly these options, so it's merely a matter of waiting.

With the Converter, many of my complaints about Newsroom fall by the wayside. You now can produce drawings far superior to any of Springboard's Clip Art disks. And the one failure of Print Power is overcome—we can draw Print Power or AwardWare pictures quickly and simply, or use a Print Shop drawing program then convert.

Any program which did any *one* of the above deeds would be considered a good buy at $20. This is a bargain—at a "No Frills" price.

PS USER'S UTILITY DISK

No Frills Software
800 East 23rd Street
Kearney, NE 68847
(308) 234-6250
$31.95, 48K disk
Reviewed by Chester Cox

There are several public domain programs for users of Broderbund's classic Print Shop software. But nothing combines so many simple-to-use utilities like No Frills Software's new **PS Users Utility Disk**.

This disk lets you view all your Print Shop icons, catalog them in alphabetical order and print them 70 to a page. It will let you do the same thing with borders and fonts. You can

transfer icons from disk to disk as quickly as any DOS would a normal file. You might even consider this a quick DOS for Print Shop, since in addition to all the above the Utility Disk will also delete, undelete and rename icons.

More? You bet! The disk has utilities to print coupons or bookmarks with Print Shop icons, borders, and fonts—or using those good old nine-sector fonts. Using those same icons, borders, etc., we can create hundreds of labels and auto-number them. I just finished over 200 labels for a local doctor's mailing list using this utility. The auto-numbering feature kept me from having to use a separate database. It also helped that PS Users' Utility Disk let me select the size of label, because these were non-standard labels.

The manual is No Frills' usual photocopied cheapie, but it's complete and conversational. Pay close attention to the Addendum. It lets you know that you can use two of eight drives at once, and that you can save your design even after printing. And the company's reputation for friendliness continues with their offer to instruct any person with a non-standard printer how to use control codes. (SASE required.)

I use Print Shop icons on a regular basis and make labels for friends at least once a month. To me, this utility disk is worth the $31.95 price for its friendly interface alone. It really is easier to use than Print Shop itself.

The program also converts icons to PS Companion format (which most icon-using programs want), while cataloging, a bonus I never thought I'd find as handy as I now do. It all depends on your use of icons.

If you use Print Shop icons with other programs, you'll want this program. If you use PS borders or fonts, you *need* this program. Each Atari user can make a significant difference by supporting the really useful 8-bit products which come our way. The PS User's Utility Disk is one such product. ▲



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Mapping the Atari

PART 3

Exclusive!

Classic 8-bit reference book returns.

By Ian Chadwick

Antic continues the exclusive serialization of key excerpts from the revised second edition of Ian Chadwick's "Mapping the Atari." Virtually impossible to obtain today, this book has been one of the key reference sources for intermediate and advanced Atari 8-bit programmers since 1983. This exclusive Antic serialization began in the August 1989 issue.

112,113 70,71 ROWAC

ROWAC and COLAC (below) are both working accumulators for the control of row and column point plotting and the increment and decrement functions.

114,115 72,73 COLAC

Controls column point plotting.

116,117 74,75 ENDPT

End point of the line to be drawn. Contains the larger value of either DELTAR or DELTAC (locations 118 and 119, below) to be used in conjunction with ROWAC/COLAC (locations 112 and 114, above) to control the plotting of line points.

118 76 DELTAR

Delta row; contains the absolute value of NEWROW (location 96; $60) minus ROWCRS (location 84; $54).

119,120 77,78 DELTAC

Delta column; contains the absolute value of NEWCOL (location 97; $61) minus the value in COLCRS (location 85; $55). These delta register values, along with locations 121 and 122 below, are used to define the slope of the line to be drawn.

121 79 ROWINC

The row increment or decrement value (plus or minus one).

122 7A COLINC

The column increment or decrement value (plus or minus one). ROWINC and COLINC control the direction of the line drawing routine. The values represent the signs derived from the value in NEWROW (location 96; $60) minus the value in ROWCRS

(location 84; $54) and the value in NEWCOL (locations 97,98; $61,$62) minus the value in COLCRS (locations 85,86; $55,$56).

123	7B	SWPFLG

Split-screen cursor control. Equal to 255 ($FF) if the text window RAM and regular RAM are swapped; otherwise, it is equal to zero. In split-screen modes, the graphics cursor data and the text window data are frequently swapped in order to get the values associated with the area being accessed into the OS data base locations 84 to 95 ($54 to $5F).

124	7C	HOLDCH

A character value is moved here before the control and shift logic are processed for it.

125	7D	INSDAT

Temporary storage byte used by the display handler for the character under the cursor and end of line detection.

126,127	7E,7F	COUNTR

Starts out containing the larger value of either DELTAR (location 118; $76) or DELTAC (location 119; $77). This is the number of iterations required to draw a line. As each point on a line is drawn, this value is decremented. When the byte equals zero, the line is complete (drawn).

USER PAGE ZERO RAM

User and/or BASIC page zero RAM begins here. Locations 128 to 145 ($80 to $91) are for BASIC program pointers; 146 to 202 ($92 to $CA) are for miscellaneous BASIC RAM; 203 to 209 ($CB to $D1) are unused by BASIC, and 210 to 255 ($D2 to $FF) are the floating point routine work area.

128,129	80,81	LOMEM

Pointer to BASIC's low memory (at the high end of OS RAM space). The first 256 bytes of the memory pointed to are the token output buffer, which is used by BASIC to convert BASIC statements into numeric representation (tokens; see locations 136, 137; $88, $89). This value is loaded from MEMLO (locations 743,744; $2E7,2E8) on initialization or the execution of a NEW command (not on RESET!). Remember to update this value when changing MEMLO to reserve space for drivers or buffers.

130,131	82,83	VNTP

Beginning address of the variable name table. Variable names are store in the order input into your program, in ATASCII format. You can have up to 128 variable names. These are stored as tokens representing the variable number in the tokenized BAISC program, numbered from 128 to 255 ($80 to $FF).

The table continues to store variable names, even those no longer used in your program and those used in direct mode entry. It is not cleared by SAVEing your program. LOADing a new program replaces the current VNT with the one it retrieves from the file. You must LIST the program to tape or disk to save your program without these unwanted variables from the table. LIST does not SAVE the variable name or variable value tables with your program. It stores the program in ATASCII, not tokenized form, and requires an ENTER command to retrieve it. You would use a NEW statement to clear the VNT in memory once you have LISTed you program.

Each variable name is stored in the order it was entered, not the ATASCII order. With numeric (scalar) variables, the MSB is set on the last character in a name. With string variables, the last character is a ''$'' with the MSB (BIT 7) set. With array variables, the last character is a ''('' with the MSB set.

132,133	84,85	VNTD

Pointer to the ending address of the variable name table plus one byte. When fewer than 128 variables are present, it points to a dummy zero byte. When 128 variables are present, this points to the last byte of the last variable name, plus one.

134,135	86,87	VVTP

Address for the variable value table. Eight bytes are allocated for each variable in the name table as follows:

Byte Variable	1	2	3 4	5 6	7 8
Scalar	00	var#	——six byte BCD constant——		
Array;DIMed unDIMed	65 64	var#	offset from STARP	first DIM + 1	second DIM + 1
String;DIMed unDIMed	129 128	var#	offset from STARP	length	DIM

In scalar (undimensioned numeric) variables, bytes three to eight are the FP number; byte three is the exponent; byte four contains the least significant two decimal digits, and byte eight contains the most significant two decimal digits.

In array variables, bytes five and six contain the size plus one of the first dimension of the array (DIM + 1; LSB/MSB), and bytes seven and eight contain the size plus one of the second dimension (the second DIM + 1; LSB/MSB).

In string variables, bytes five and six contain the current length of the variable (LSB/MSB), and bytes seven and eight contain the actual dimension (up to 32767).

136,137 88,89 STMTAB

The address of the statement table (which is the beginning of the user's BASIC program), containing all the tokenized lines of code plus the immediate mode lines entered by the user. Line numbers are stored as two-byte integers, and immediate mode lines are given the default value of line 32768 ($8000). The first two bytes of a tokenized line are the line number, and the next is a dummy byte reserved for the byte count (or offset) from the start of this line to the start of the next line.

Following that is another count byte for the start of this line to the start of the next statement. These count values are set only when tokenization for the line and statement are complete.

Tokenization takes place in a 256 byte ($100) buffer that resides at the end of the reserved OS RAM (pointed to by locations 128,129; $80,$81).

138,139 8A,8B STMCUR

Current BASIC statement pointer, used to access the tokens being currently processed within a line of the statement table. When BASIC is awaiting input, this pointer is set to the beginning of the immediate mode (line 32768).

140,141 8C,8D STARP

The address for the string and array table and a pointer to the end of your BASIC program. Arrays are stored as six-byte binary coded decimal numbers (BCD) while string characters use one byte each. The address of the strings in the table are the same as those returned by the BASIC ADR function. Always use this function under program control, since the addresses in the table change according to your program size.

142,143 8E,8F RUNSTK

Address of the runtime stack which holds the GOSUB entries (four bytes each) and the FOR-NEXT entries (16 bytes each). The POP command in BASIC affects this stack, pulling entries off it one at a time for each POP executed. The stack expands and contracts as necessary while the program is running.

Each GOSUB entry consists of four bytes in this order: a zero to indicate a GOSUB, a two-byte integer line number on which the call occurred, and an offset into that line so the RETURN can come back and execute the next statement.

Each FOR-NEXT entry contains 16 bytes in this order: first, the limit the counter variable can reach; second, the step or counter increment. These two are allocated six bytes each in BCD format (12 bytes total). The 13th byte is the counter variable number with the MSB set; the 14th and 15th are the line number and the 16th is the line offset to the FOR statement.

144,145 90,91 MEMTOP

Pointer to the top of BASIC memory, the end of the space the program takes up. There may still be space between this address and the display list, the size of which may be retrieved by the FRE(0) command (which actually subtracts the MEMTOP value that is at locations 741 and 742; $2E5, $2E6). Not to be confused with locations 741 and 742, which have the same name but are an OS variable. MEMTOP is also called TOPSTK; it points to the top of the stack space pointed to by RUNSTK above.

186,187 BA,BB STOPLN

The line where a program was stopped either due to an error or the use of the BREAK key, or a STOP or a TRAP statement occurred. You can use PEEK (186) + PEEK (187) * 256 in a GOTO or GOSUB statement.

195 C3 ERRSAVE

The number of the error code that caused the stop or the TRAP. You can use this location in a program in a line such as:

10 IF PEEK (195) < > 144 THEN 100

201 C9 PTABW

This location specifies the number of columns between TAB stops. The first tab will be at PEEK (201). The default is ten. This is the value between items separated in a PRINT statement by commas—such as PRINT A$,LOOP,C(12)—not by the TAB key spacing.

The minimum number of spaces between TABS is three. If you POKE 201,2, it will be treated as four spaces, and POKE 201,1 is treated as three spaces. POKE 201,0 will cause the system to hang when it encounters a PRINT statement with commas. To change the TAB key settings, see TABMAP (locations 675 to 689; $2A3—$2B1). PTABW is *not* reset to the default value by pressing RESET or changing GRAPHICS modes (unlike TABMAP). PTABW works in all GRAPHICS modes, not merely in text modes. The size of the spaces between items depends on the pixel size in the GRAPHICS mode in use. For ex-

ample, in GR.0, each space is one character wide, while in GR.8 each space is one-half color clock (one dot) wide.

203-207 CB-CF ****

Unused by either BASIC or Assembler.

208-209 D0-D1 ****

Unused by BASIC.

210-211 D2-D3 ****

Reserved for BASIC use.

Locations 212 to 255 ($D4 to $FF) are reserved for the floating point package use. The FP routines ae in ROM, from locations 55296 to 57393 ($D800 to $E031). These page zero locations may be used if the FP package is not called by the user's program. However, do not use any of these locations for an interrupt routine, since such routines might occur during an FP routine called by BASIC, causing the system to crash.

212-217 D4-D9 FR0

Floating point register zero; holds a six byte internal form of the FP number. The value at locations 212 and 213 are used to return a two byte hexadecimal value in the range of zero to 65536 ($FFFF) to the BASIC program (low byte in 212, high byte in 213). The floating point package, if used, requires all locations from 212 to 255. All six bytes of FR0 can be used by a machine language routine, provided FR0 isn't used and no FP functions are used by that routine. To use 16 bit values in FP, you would place the two bytes of the number into the least two bytes of FR0 (212,213; $D4,$D5), and then do a JSR to $D9AA (55722), which will convert the integer to its FP representation, leaving the result in FR0. To reverse this operation, do a JSR to $D9D2 (55762).

218-223 DA-DF FRE

FP extra register (?)

224-229 E0-E5 FR1

Floating point register one; holds a six-byte internal form of the FP number as does FR0. The FP package frequently transfers data *between* these two registers and uses both for two-number arithmetic operations.

MAPPING THE ATARI
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Ian Chadwick is a Toronto-based freelance writer.

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BRAND NEW ITEMS

$199.95 The "BLACK BOX"!© $199.95

The **Black Box** is a device for your XL or 130XE computer that adds tremendous power to your 8-bit Atari. It has two buttons, two switches, and a set of dip switches visible from the outside. It plugs directly into the back of the 600XL, 800XL, and 130XE computers. Custom cases may be an optional expense. The **Black Box** performs three main tasks: Interface to a SASI/SCSI bus device (hard disks), Parallel printer port, and a RS232 port. A fourth option, available soon, will be a floppy disk port, especially useful to XF-551 owners. The SASI/SCSI port provides the necessary signals for hooking up most common hard disks. You may partition your hard disk into as many drives as you wish; up to 9 can be accessed at at time. By pressing one of the buttons on the **Black Box**, you will enter the configuration menu, where you can re-assign drive numbers, etc. When you exit, you will be right back in the program you were running when the switch was pressed. Each hard disk can be write-protected. The Parallel Printer port will allow you to hook up any printer that uses the standard Centronics interface. As an option, you can use the computer's extra memory as a printer buffer, or order the **Black Box** with 64K of on-board RAM. You may assign printer number and line-feed options within the menu (for use with multiple printers). Another amazing feature of the **Black Box** is the built-in screen dump. By pressing a button (on the box), the contents of your screen will be dumped to your printer (you can define text or graphics modes with a switch)! The RS232 port supplies the full RS232 spec signals for connection to a modem, or another machine (for null-modeming). The handler for the **Black Box**' s modem port is built in and takes up NO memory! The port handles rates up to TRUE 19.2K BAUD! A future upgrade for the **Black Box** is a floppy disk interface board. This will allow the addition of up to four 5.25" or 3.5" mixtures of floppy drives to be used with the system. The drives will act like standard single/enhanced/double density disk drives, but MUCH faster! All drives will be Super Archiver compatible, and support up to 2 sides of 80 tracks. Along with this hardware upgrade will come software capable of reading, writing, and formatting disks in IBM's MS-DOS format and the Atari ST format, and allow you to transfer files between those disk formats and the Atari's format. In addition , a machine language monitor has been added to allow memory disassembly, memory/register changes, and more. The Price of the **Black Box** is $199.95 for the basic unit and $249.95 with 64K of RAM (for printer spooler) plus $8 for S/H/I.

$199.95 The "MULTIPLEXER"!© $199.95

This device brings the power and flexibility of larger systems to your 8-bit. The **Multiplexer** is a device (actually a collection of modules) that allow up to 8 Ataris to read and write to the same drive (typically a hard disk), printer, and talk to each other. One 'master' computer (any 8-bit) is equipped with the master **Multiplexer** interface. Then up to 8 'slave' computers can hook up to the master, each having their own slave interface. The 'common' peripherals (things that are to be shared) are connected to the master computer. On each slave, all disk and printer I/O is routed through the master, so no drives are needed on them. The master computer can be configured in any manner you wish - you can for example have certain peripherals 'local' to the slave, or routed to a different number on the master. Under development is a BBS system that will make full use of this device, allow ing up to 8 lines/users to be using the system at the same time! A mutiuser chat mode is a feature of this program, however, you do not NEED this program to run a BBS with the **Multiplexer** (but be warned that not all BBS programs will run concurrently). All slaves are independent, and do not need to have the same program running on them. This system is excellent for BBS SysOps, because you can be using your hard disk(s) while still running your BBS uninterrupted! Another example is in a classroom situation, or anywhere a disk needs to be shared by different people. This is an EXCELLENT programming/debugging tool as well! The **Multiplexer** price is $199.95 for a master and two slave units (plus $5 S/H/I). Additional slave units are $69.95 each.

$149.95 The "SUPER E-BURNER"!© $149.95

This device plugs into your Atari's cartridge port, allowing you to program PROMs or EPROMs. (EPROM stands for Erasable Programmable Read-Only Memory.) A PROM is a type of integrated circuit that will store information permanently. This is what is used in cartridges, and even in the computer to hold the operating system program. The **'Super E-Burner'** will program the following chips: 2732, 2764, 27128, 27256, and 27512 PROMs/EPROMs, with any suffix. The burner will let you make multiple copies, read data, burn from a file, etc, but does so EXTREMELY fast! It can fully burn and verify a 27128 in 15 seconds. Also under development is a gang-burner module for the **'Super E-Burner'**, allowing it to program up to 8-chips at a time, with this same insanely-fast speed! The **'Super E-Burner'** sells for $149.95. A deluxe version capable of programming 1 MEG EPROMs is available for $179.95. Add $5 for S/H/I

$99.95 The "POWER PLUS"!© MEMORY UPGRADE $99.95

(for 800XL'S and 130XE's only)

C.S.S. has made the **'Power Plus'!** memory upgrades available on an 'unadvertised' basis to our regular patrons. These upgrades have become so popular we are now making them available to everyone! For those of you unfamiliar with **'Power Plus'!** upgrade, it is the most COMPATABLE upgrade available for the 800XL or 130 XE. All other upgrade kits have some degree of INCOMPATABILITY with certain software programs. C.S.S. studied this problem and developed the **POWER PLUS** upgrade which, to the best of our knowledge, appears to be 100% compatible. To upgrade a 130XE to 320K is only $99.95. To upgrade an 800XL to 320K is only $149.95 (circuitry from a 130XE is actually transplanted into the 800XL). Add $5 for S/H/I. C.S.S. will install these upgrades for only $20 if you wish.

$39.95 The SIO "POWER BOOSTER"!© $39.95

Weak data signals are often the problem of errors in data transmissions, especially when working in High or Ultra Speed modes! Long cables, modems, interfaces, and other devices that draw their power from the computer rather than having their own power supply often degrade the waveform of the signals between your computer and other peripherals, sometimes resulting in errors. The **SIO Power Booster Cable!** will amplify the signal to and from your computer 20 to 100 times providing perfect square-wave data transmissions regardless of peripherals used . The **"SIO Power Booster" Cable!** looks like a standard SIO cable and simply plugs into your computer! Only $39.95 plus $5 S/H/I.

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This Deluxe version of the **"QUINTOPUS!"** has all of the above features with the additional benefits of two **SWITCHABLE PORTS!** This means you can connect two computers to one printer or two printers to one computer; you can switch in a computer/printer combination and while you're printing out a long document, switch in a second computer to access a modem, disk drive, cassette deck, etc! Switch multiple combinations of peripherals or computers without the hassle or re-arranging I/O cables...simply flip a switch! Only $59.95 plus $5 S/H/I. SIO cable is $5 extra if needed.

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Budgetizer

Be prepared for those annual savings chompers

By Lee Brilliant, M.D.

Plan your monthly spending with the Budgetizer, so those annual big bills don't catch you unprepared. This BASIC program works on 8-bit Atari computers with at least 48K memory and disk drive.

Surprise! You won the lottery!

Nice surprise, huh? Too bad most surprises sound more like this:

"Uh-Oh. Property tax bill due next month. Where are we going to get the money?"

Surprise! Well, that's what it used to be like around my house every month. I was always getting big surprise bills that I knew were coming, but just didn't think about ahead of time. Especially upsetting were those annual or twice-yearly biggies like property taxes or insurance premiums.

So when I learned about the Budgetizer method, I wrote a program to use it and since then have had no big surprises besides automobile repairs.

Budgetizer is not just a different budget program, but a different way of budgeting. A typical budget program sets goals for various areas and simply tells you how much above or below you are in any month. Budgetizer lets you set up a chart of all your bills for the year and then calculates how much you'll need to put aside for the future to meet those expenses.

Most people avoid the shock of making large payments by making monthly payments instead of periodic ones on such expenses as heating, mortgage and insurance. However, if you have an escrow account as part of your mortgage (to pay insurance and taxes) you should figure what you lose each year.

If your property taxes are $1,000 each year and home insurance is $500, then the interest which the escrow company earns on this money is over $100—which you will probably not get back. Budgetizer essentially turns your irregular expenses into monthly payments to your own account, eliminating unpleasant surprise and saving you money.

GETTING STARTED

Type in Listing 1, BUDGET.BAS, check it with TYPO II, and SAVE a copy to disk. When you first RUN Budgetizer, it will ask whether your system is using one drive or two. If you tell the program you are using two drives, you need to have your data disk in drive two.

Antic disk users will find a sample data file, BUDGET.DAT, on the disk. Budgetizer will look for this file, and if you choose EDIT from the main menu you will see the expense categories already on disk.

BUDGETIZING SYSTEM

Budgetizer allows you to list all your expenses for a whole year, then assigns them to one of two groups. If the amount of an expense is the same for every month the program considers it a fixed expense. If the amount differs from one month to the next it is considered periodic.

Fixed expenses are stored as positive numbers and periodic ones as negatives. When you print the budget, the fixed and periodic expenses are totaled separately for each month and also as grand totals.

The periodic expenses divided by twelve gives you the monthly cost of all the irregular bills. Each month, the program adds the fixed costs and the average periodic cost, then subtracts the monthly periodic expense.

You wind up with twelve numbers labeled RESERVE. MIN. MONTHLY INCOME is the minimum amount of income which you need to deposit into your checking account each month to cover all the expenses. RESERVE represents the amount of money that must be left in your checking account at the end of each month to meet upcoming bills.

There are four levels to the program. The main menu allows you to select Print, Edit, Save, and Quit. Print Save and Quit are pretty self-explanatory, but Edit is more complex.

USING BUDGETIZER

When you choose Edit, the program will work with the data file, BUDGET.DAT. If you are using two drives, the program looks on drive 2 for this file. Otherwise it looks on drive 1. If a BUDGET.DAT file is found, the program loads the information automatically.

Once you choose Edit, the next level is CATEGORIES. You can have up to six categories of expense, such as Loans, Utilities or Credit Cards.

Choose a category, then go to FIELDS. You can have up to ten fields per category. Under Loans, for example, you might have House and Car. Finally, there are twelve RECORDS (monthly payment amounts) per field.

Use the [CONTROL][ARROW] keys to highlight your choice, then press [SELECT] to go to the next level. The [ESC] key takes you back to the previous level. The arrow keys also allow you to move around within the window and [RETURN] causes the program to read the data as it appears in the window.

To eliminate a category or field, simply make its name all blanks and press [RETURN]. If you change a name, only the name changes, the data stays intact.

New fields and categories are added to the end of the list. Only uppercase letters and numbers are acceptable as categories and fields. Records must be entered as numbers only.

You can change the number of fields, record size, or the length of names if you want. But the numbers I used were selected because of formatting considerations with the printer. All the printer codes are in one line at the end of the program and may need to be adjusted to fit your printer.

EQUIVALENCING HELPS

Much of the credit for this program goes to Doug White and his article, *Equivalence*, in the February, 1989 issue of **ANTIC**. His article inspired me with a better way to manipulate data fields.

Although Doug White did not specifically mention this technique, I first dimension my data array (ARRAY 11,39) then a string (ARRAY$) to the length of one byte. Later I change the pointers of ARRAY$ to match the location and size of ARRAY. Now I can clear sections of the array by blanking strings instead of slower FOR-NEXT loops. I can also move data around the array with fast string manipulations. My hat's off to Doug for a fascinating and useful concept.

I have used BUDGETIZER for two years now and during this time I have had no unpleasant major surprises. Now if I could only win the lottery. . ..

Lee Brilliant is a physician in Southern California and a longtime Atari 8-bit programmer-writer. His work has often appeared in **Antic**.

Listing on page 38

BUDGET PRINTED JUNE 19, 1989

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
HOME												
RENT	340	340	340	340	340	340	340	340	340	340	340	340
PG&E	18	18	18	18	18	18	18	18	18	18	18	18
PHONE	10	12	15	10	14	12	10	10	12	16	12	20
PERSONAL												
FOOD	160	160	160	160	160	160	160	160	160	160	160	200
CLOTHES	20	20	20	20	20	20	20	20	20	20	20	20
COMICS	80	80	80	80	80	80	80	80	80	80	80	80
BOOKS	20	20	20	20	20	20	20	20	20	20	20	20
MISC	40	40	40	40	40	40	40	40	40	40	40	40
TRANSPORTATION												
AC PASS	54	54	54	54	54	54	54	54	54	54	54	54
MISC	10	10	10	10	10	10	10	10	10	240	10	10
FIXED	572	572	572	572	572	572	572	572	572	572	572	572
PERIOD	180	182	185	180	184	182	180	180	182	416	182	230
TOTAL	752	754	757	752	756	754	752	752	754	988	754	802
RESERVE	25	48	68	94	115	138	163	189	212	1	24	0

MIN MONTHLY INCOME=777.25

BALANCE ____________

BILLS DUE -____________

BILLS OUT +____________

RESERVE -____________

AVAIL BALANCE ____________


NEW
ATARI
HAND-HELD
COLOR
GAME SYSTEM
B
A
RESTART
OPTION 1
FLIP
PAUSE
OPTION 2
ON
OFF
B
A
ATARI

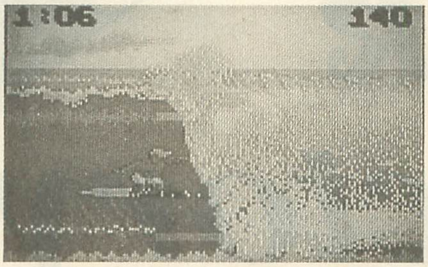
Portable arcade quality at $149.95

By Andrew Reese, START Editor

Atari's new $149.95 handheld color game machine was unveiled at the Consumer Electronics show in June. The one-pound unit, powered by six AA batteries, is titled the Atari Portable Color Entertainment System. I tested several of the units and found the games easy to use and quite playable.

The Portable Color Entertainment System competes with Nintendo's recently announced GameBoy which is to retail at only $89.95, but does not have color. The PCES has a 3.5-inch (diagonal) LCD color screen with 160 X 102 resolution and a 4,096-color palette. It uses a 65C02 microprocessor running at a blazing 16 mHz clock speed. The 64K Portable Color Entertainment System can access credit-card-sized "game cards" with as much as 16 megabits of ROM, allowing the system to run highly complex games. Four sound channels are included and there is a built-in headphone jack for private listening.

A unique feature of the Portable Color Entertainment System is its ability to network with as many as seven additional units for multi-player games. A communications cable comes with each unit. The package also includes an AC adaptor, a carrying pouch and Epyx's California Games card.



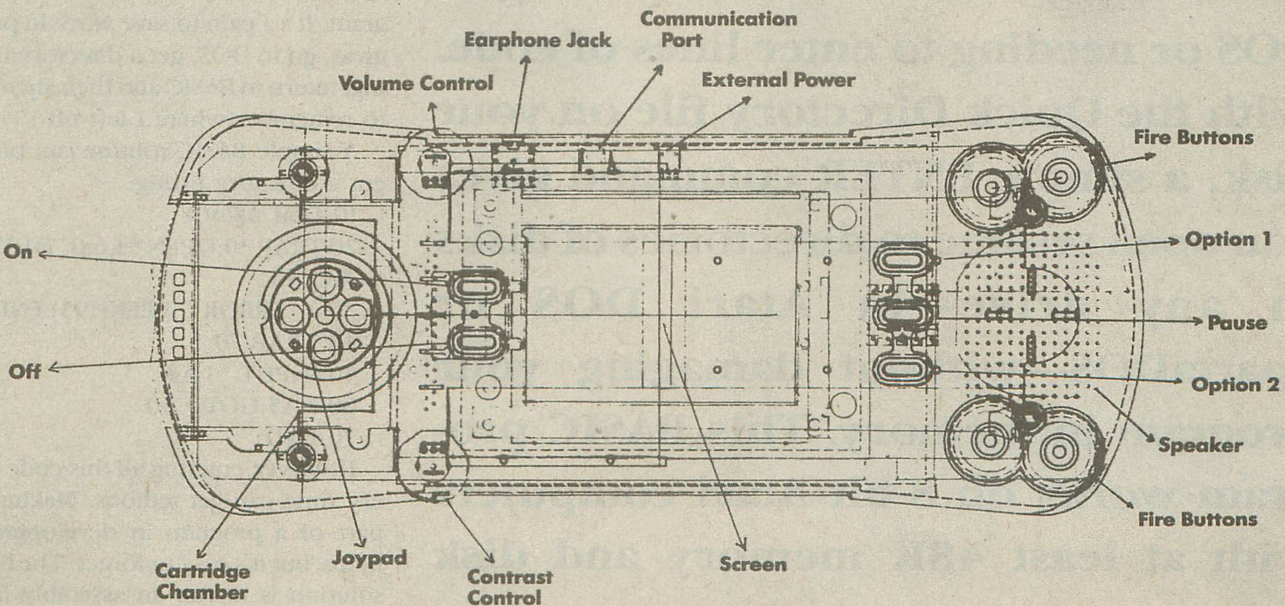
California Games

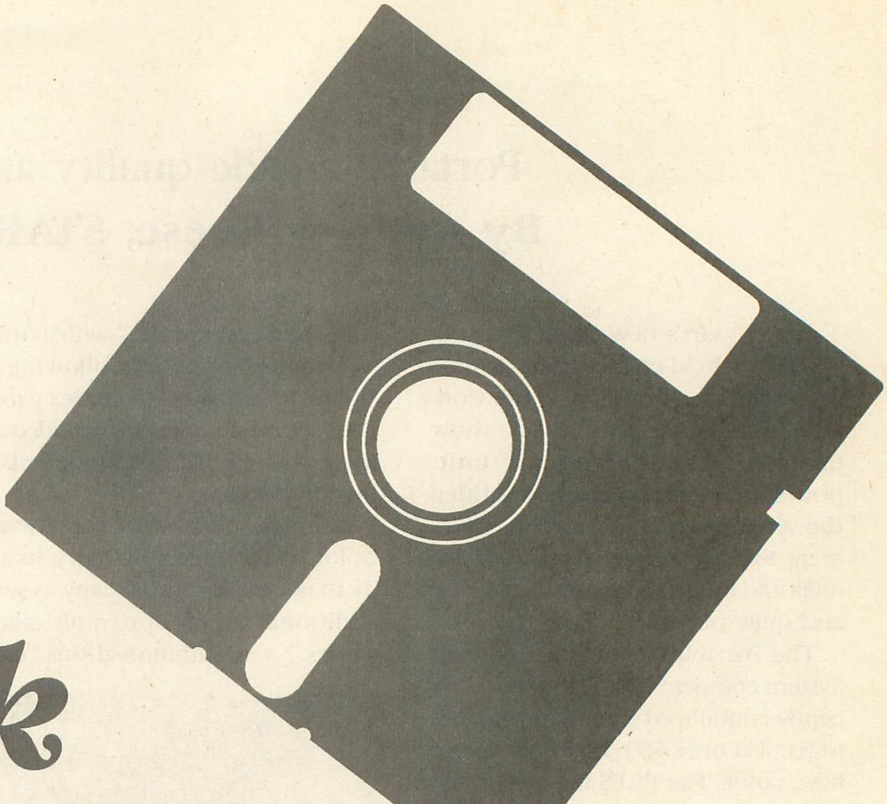
The Portable Color Entertainment System was developed in conjunction with Epyx. It is controlled by an 8-way joypad, plus two fire buttons and five function buttons. The screen image can be turned upside down to make the controls more comfortable to left-handed players.

According to Atari president Sam Tramiel, the unit has already passed FCC testing and goes on sale in early Autumn. Five additional games are also to be available—Blue Lightning, Time Quests, Treasure Chests, Gates of Zendocon, Impossible Mission and Monster Demolition. Each game will retail for $34.99.

ATARI PORTABLE COLOR ENTERTAINMENT SYSTEM

TOP VIEW





By Matthew Ratcliff

Easiest access to your disk contents

Quick Directory

Access the directories of your disks while using BASIC, without exiting to DOS or needing to enter lines of code. With the Quick Directory file on your disk, a simple ENTER command gives you open sesame to directories of disks in any drive—in Atari DOS or SpartaDOS—without damaging your program in memory. This BASIC program works on 8-bit Atari computers with at least 48K memory and disk drive.

Time and time again I lose track of important filenames while in the middle of writing a BASIC program. It's a pain to save work in progress, go to DOS, get a directory listing, return to BASIC and then attempt to remember where I left off.

A simple BASIC routine can present a directory listing:

```
10 DIM A$(40)
20 TRAP 30:OPEN #1,6,0,"D1:*.*":
GOTO 40
30 ? "ERROR ";PEEK(195):END
40 TRAP 70
50 INPUT #1,A$
60 ? A$:GOTO 50
70 END
```

However, entering all this code every time can get tedious. Making it part of a program in development helps, but it's easy to forget. The best solution is to run an assembly language utility from BASIC. But, this im-

plies a USR routine because Atari BASIC will not allow us to make calls to DOS directly.

Quick Directory makes accessing a current directory listing quite simple. It will have no adverse effects on the BASIC program currently in memory.

GETTING STARTED

Type in Listing 1, QDIRMAK.BAS, check it with TYPO II, and SAVE a copy to disk before you RUN it.

Listing 2 contains the MAC/65 source code for assembly programmers and requires the MAC/65 cartridge. You do not need to type Listing 2 to use Quick Directory.

QDIRMAK.BAS is a BASIC Quick Directory maker. RUN it and the program prompts you to get a disk ready in drive 1. Some special text and data will be written to your disk in a file named D:QDIR.

The D:QDIR file contains two lines of BASIC code with an embedded assembly USR routine, without line numbers. Try the command:

ENTER "D:QDIR"

Or try the Atari BASIC abbreviated version:

E."D:QDIR

Almost immediately, the program will request you to specify the directory you want to see. Enter D8:*.BAS to see all the BASIC programs on the disk in drive 8, for example. Unlike Atari DOS command A, you can't just press [RETURN] to see a directory of the disk in drive 1. To see all the files on the disk in drive 1, type D:*.*.

Use QDIRMAK.BAS to write the Quick Directory QDIR file to any disk you're planning to use with BASIC, and you'll always be able to see a directory of your files from BASIC with this simple command.

To see what these two lines of code look like, remove the "REM" from lines 90 and 150 in QDIRMAK.BAS (Listing 1), and RUN the program again. (You may also wish to change the filename in line 70 to "D:QDIR.LST".) Type the NEW command, ENTER the new file, and LIST the program. All the odd control characters in the string assignment for A$ make up an assembly language USR routine. With these two lines of code in a program, a directory listing is as simple as "A=USR(ADR(A$))".

SpartaDOS users might notice that Quick Directory file listings are in the long format. This makes it easy to keep track of file size and date stamps, as well as names.

Now, whenever you forget an important filename, simply type E."D:QDIR to see a directory listing, in immediate mode. Note that you can get subsequent directory lists by entering A=USR(ADR(A$)) while still in immediate mode. However, this could be dangerous if you make a typographical error, or inadvertently zap the variable A$ with a NEW or LOAD command. The E."D:QDIR" command is the safest approach, and far simpler than trekking in and out of DOS.

Quick Directory eliminates time-consuming commutes between Atari BASIC and DOS.

PROGRAM NOTES

Listing 2 is the MAC/65 source code for Quick Directory. Assembly programmers should take note of the "conditional assembly" technique employed here. Note the equates in lines 40 through 60:

```
40 OBJECT = 1
50 COM = 2
60 CODE = OBJECT
```

When the variable name CODE is set equal to OBJECT, the code between the ".IF" in line 790 and the ".ENDIF" in line 910 is assembled. This creates an object file suitable for placing in a BASIC USR routine.

While developing Quick Directory, it was much easier to test the program from DOS. To make a version that is loaded and executed from DOS, simply change line 60 to:

```
60 CODE = COM
```

When CODE is set to COM, MAC/65 ignores all the code enclosed in the first ".IF", ".ENDIF" sequence noted above. The code between lines 1630 and 1660 is assembled, however. These lines generate the proper header to execute Quick Directory from DOS. This technique is a valuable debugging tool, especially when developing USR routines that require conversion to some BASIC-compatible format before testing.

The rest of the MAC/65 program is made up of straightforward calls to the CIO to open files, close files, input strings, and display strings. Stuffing the number 128 into ICAUX2 (lines 1310 and 1320) starts the SpartaDOS long directory listing format. It has no side effects on Atari DOS.

Quick Directory eliminates many frustrating, time-consuming commutes between Atari BASIC and DOS. Since it runs in immediate mode, it consumes no valuable RAM. It does not gobble up Page 6 or 4, common hangouts of many USR routines. Enter QDIR the next time you require directory assistance in a hurry. ▲

Matthew Ratcliff regularly answers users' technical questions on CompuServe's ANTIC ONLINE.

Listing on page 41

Capture The Flag!

Two-player madness at machine language speed

By Brad Timmins

Armed with disintegration pistols, you and your opponent race through giant mazes in a mad dash to Capture the Flag! This month's **Antic** Super Disk Bonus is programmed entirely in speedy machine language. It's a challenging two-player game that requires two joysticks and at least 48K memory.

It's the year 2044. Ultra-violent TV game shows are at the height of their popularity. The most popular game on the airwaves is Capture the Flag! which is played in a giant maze.

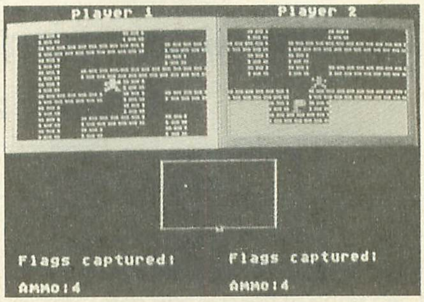
The two home bases are placed in the upper left and right corners of the maze. A flag is placed at the very bottom of the maze. Two contestants enter with their disintegration pistols. The player who captures the flag and successfully returns it to home base wins the round. The first player to capture five flags wins the game and saves his life!

Capture the Flag! author Brad Timmins lives in Sandy, Utah. His program *Macro RESET* appeared in the January, 1989 **Antic**.

USING THE PROGRAM

You'll find Capture the Flag! on this month's Antic Disk as CAPTURE.OBJ. Copy this file to another disk formatted with DOS 2.0 or DOS 2.5. Don't try to run it directly from the monthly Antic Disk.

Be sure your new disk contains the DOS.SYS file. Use DOS command E to rename CAPTURE.OBJ to AUTORUN.SYS. Turn off your computer and remove all cartridges. Place the disk in drive 1. If you're using an XL or XE computer, hold down the [OPTION] key while you turn on your computer. Capture the Flag! will load and run automatically.



HOW TO PLAY

Capture the Flag! requires two joysticks, plugged into ports 1 and 2. At the beginning of each round, both players are placed on their home bases. To move your player, press the joystick in the desired direction.

Each player is outfitted with a disintegration pistol that has a maximum of four shots. To fire, move the joystick in the direction you want to fire and press the button. Pistols can be used to blast through walls, or to blast the other player. A player who is hit goes immediately back to home base. If the player was carrying a flag, it will be dropped where the player was hit.

Each maze that's generated is far too large to be displayed on a single screen. Instead, each player has a scrolling window. A master map is displayed at the bottom of the screen, showing players' relative positions—but not the actual walls of the maze.

To pick up the flag, simply move on top of it. The flag is quite heavy and will slow down the movement of the player carrying it. Also, when the flag is carried by one player, the other player gets unlimited ammunition—but only while the first player holds the flag. As soon as the flag is dropped, the amount of ammunition returns to its previous level.

If you manage to make it back to base safely with one flag, a new maze appears, and off you go again. The first person to collect five flags is the Grand Champion.

RAPID DISK

Super Bottleneck Breaker

Contest winner improves powerful BASIC speed-up tool

By Eric Woodruff

The April 1989 issue of Antic ran a program called Bottleneck Breaker *by Stan Lackey. This BASIC profiler measured how much time a running BASIC program spent executing any particular line or group of lines. Once identified, the most heavily used lines could then be streamlined to speed up the program's performance.*

***Antic** challenged readers to relocate the profiler's counters to the 130XE's alternate memory bank, allowing the profiler to work with larger programs. The winning entry, Super Bottleneck Breaker, not only uses the extra memory of an XE, but features additional modifications that make the original more user friendly. This BASIC program works on 8-bit Atari computers with at least 48K memory and disk drive.*

I have made the modifications to Bottleneck Breaker so that the counters are now located in the 130XE's extra memory.

In addition, I modified the profiler to make use of all the 130XE's extended memory and now there is a counter for each line of a BASIC program from 0 through 31767 inclusive. I have also made changes that allow the profiler's interrupt routine to be placed anywhere in memory with a few changes to the loader.

By default, Super Bottleneck Breaker is loaded into Page 6 starting at memory location 1536. By modifying the value of the variable START in line 100, the profiler can be placed at a different memory location. If you prefer to reserve memory for it, you can place a REM on line 100 and remove the REM from line 80.

I moved the profiler on/off flag to memory location 1278 ($04FE hex). This allows for the program's mobility. One other thing, Super Bottleneck Breaker will now detect if the program is running or not, using the on/off flag set to on if the program is running (POKE 1278, non-zero value). If the BASIC program is not running, the profiler will turn the flag off for you and stop profiling.

Super Bottleneck Breaker's analysis routine has also been modified to take advantage of the extended mem-

ory. You can now produce a report to the screen or printer for a specified number of bottlenecks (1-255).

CAUTIONS

The same cautions given in the original article still apply. The program you are profiling cannot use lines 1-3 or 31765-31766, or you won't be able to add the program lines which control the profiler. If the profiler tries to sample your program while the BASIC interpreter is moving from one line to the next, a garbage line number will appear in the final report. This happens rarely enough that it does not affect the results in any significant way.

One exception to the original cautions is that the only memory locations the Profiler now uses are 208 and 209 ($D0, $D1 hex). Still, if your program uses these locations, the profiler may produce wrong answers or crash.

GETTING STARTED

Type in Listing 1, PROFILE1.BAS, check it with TYPO II and SAVE a copy to disk.

Next, type NEW, then type in Listing 2, PROFILE2.LST, check it with TYPO II and LIST a copy to disk. If you have trouble typing the special characters in line 2, don't type them in. Instead, type in Listing 4 and check it with TYPO II. When you RUN Listing 4, it creates this hard-to-type line and stores it in a file called LINES.LST. (Make sure you don't already have a file by that name on your disk *before* you RUN Listing 4.)

To merge the two programs, type NEW, then ENTER "D:PROFILE2.LST" and then ENTER "D:LINES.LST". Be sure to LIST the completed program to disk.

Now, type NEW, then type in Listing 3, PROFILE3.BAS, check it with TYPO II and SAVE a copy to disk.

In addition to the programs needed to run the profiler, Antic Disk owners will find three MAC65 files on disk containing source code for the profiler (PROFILE.M65) and for the assembler routines that the profiler uses (MEMCLR.M65, CNTANL.M65). These files are included for the reference of MAC/65 programmers and are not needed to run the profiler.

USING THE PROFILER

The procedure for running the Profiler is still the same as the original:

1. RUN "D:PROFILE1.BAS" to load the Profiler into memory.
2. LOAD the program to be profiled.
3. Check that the program does not contain lines numbered 1, 2, 3, 31765, or 31766.
4. ENTER "D:PROFILE2.LST"
5. RUN your program.
6. RUN "D:PROFILE3.BAS"

When you run PROFILE3.BAS, the screen will blank and there is a slight delay while the analysis routine is loaded into memory. You are then asked how many bottlenecks you want to see. Enter a number from 1 to 255. The program then asks if you are sure. If the wrong number was entered, just type an [N] and press [RETURN]. A new value can then be entered.

Next, the program informs you that the screen will blank during analysis and gives an estimated time (minutes:seconds) for the analysis. The time will vary from a few seconds for a small number of bottlenecks, up to about 8 minutes 6 seconds for 255 bottlenecks. To begin the analysis, just press [START].

When the analysis is complete, the screen will reappear and the total counts will be accumulated. A prompt will then appear asking if the report wil be sent to the screen or printer. Just enter an [S] or a [P] depending on your preference. A report is then prepared showing the line number, number of counts, percentage of total counts taken up by the line, and a cumulative percentage.

Eric Woodruff lives in Medical Lake, Washington. This is his first **Antic** *appearance.*

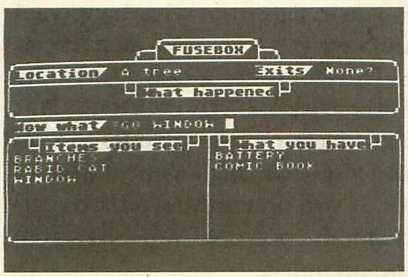
Listing on page 40

SUPER DISK BONUS

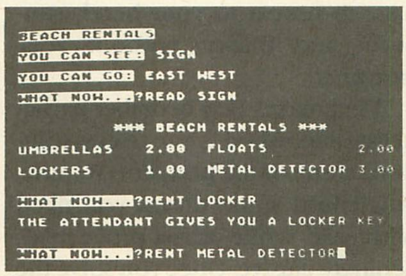
Adventure Contest Winners

Fusebox, Beachcomber and Discovery Incident

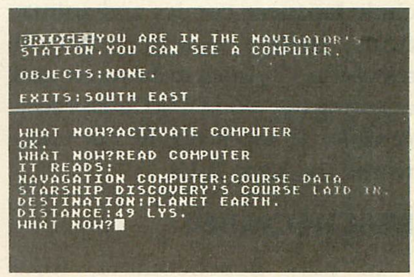
Article by Carolyn Cushman, Antic Assistant Editor



Fusebox



Beachcomber



Discovery Incident

When **Antic** published David Wooley's **Adventure Works** article in the April, 1989 issue, we challenged readers to come up with their own text adventures, based on Wooley's sample. We received a number of impressive entries and had an enjoyable time picking out the most entertaining of the bunch.

Although most of entries had fantasy adventures, two of the adventures that showed the most dramatic—and most imaginative—improvements had very prosaic scenarios. The object of Ray Irish's *Fusebox* is to change a fuse. *Beachcomber* by J.G. Ulman takes you to the beach and boardwalk for a tricky seaside treasure hunt.

But for a science fiction adventure, David Woolley himself returns with *The Discovery Incident*, a mystery-adventure that puts you on an abandoned spaceship with an unknown alien threat.

You'll find all three text adventures on this month's Antic Disk. Separate HELP files with lists of verbs, etc. are provided for Fusebox and Discovery Incident. Beachcomber includes such information as part of its title-screen sequence.

Since these are BASIC programs, you can RUN them directly from the Antic Disk. But if you want to SAVE your game to disk you will need to copy the text adventure to another disk containing the DOS.SYS file. Both Fusebox and Discovery Incident will let you SAVE your game. All three games require a minimum of 48K memory.

As in our original sample adventure, most commands require a VERB/NOUN combination, such as EXAMINE BED or FLUSH TOILET. In all three games, direction commands require only a single letter. To move north, south, east or west type N, S, E or W. Our testers found this modification particularly handy—typing GO and a direction every time you move gets tedious soon.

And now, here are the storylines for the winning games:

FUSEBOX

Late one night you find yourself alone in your new home using all of your modern electrical home appliances at the same time. Not a wise thing to do, however, because you just blew a fuse. It's up to you to restore electric power to your cozy home. Sounds easy? Think again! You don't even know your way around your new house, much less where anything is. You can't even find your cat, who's been missing since you moved in. . . ▶

Fusebox author Ray Irish added some fancy screens and special effects that almost make dying worth it. To make things trickier, the listing has been encrypted by the author. You can't just read the program listing to figure out the objects and commands you need.

Fusebox has relatively few rooms to explore, but a lot is packed into those few rooms. It's a good idea to make a map, so you don't miss anything. Most of the things you find do *something*—if the command you use doesn't work, try another.

Ray Irish of Federal Way, Washington is 20 years old. His interests include Japanese comics and animation, British science fiction television, Christian metal music and restoring his 1964 Olds Cutlass convertible. To top it off, he currently works for Toys 'R Us.

BEACHCOMBER

To play Beachcomber, RUN BEACH.BAS from this month's Antic Disk. Beachcomber opens with a handy information screen full of commands and a short scenario. Then press [RETURN] and the actual adventure (in the file BEACH.GAM) will RUN.

Among other modifications in this adventure, you can drop items and come back to them—but items left unattended may well be stolen. There's also a number of things you can't do unless you do something else first, adding to the challenge of the game. If it seems that the shops on the boardwalk are all closed, keep exploring. At worst you'll just have to retreat to your hotel, sunburnt and thirsty, without your treasures.

What makes Beachcomber particularly interesting is the tricky solutions some of the problems require. You'll find some things you need with ease, while others prove maddeningly elusive. Once you solve the various puzzles, you should be able to complete the adventure in about 15 minutes—but don't expect to be able to do so the first time out, or even the fourth.

DISCOVERY INCIDENT

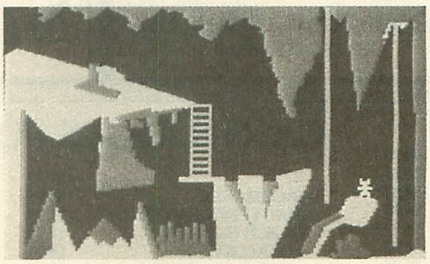
David Woolley, author of the original *Escape From Barnaby's Isle*, returns with a science fiction mystery, the Discovery Incident. You're the captain of the starship Discovery, and you just awakened in the ship's infirmary—with a slight case of amnesia. Your crew has disappeared, and there's a strange, alien cannister in the launch bay. It's up to you to figure out what happened and save Earth from an alien threat.

The Discovery Incident is on the Antic Disk as ADVENT.BAS. This text adventure even includes a menu and a special "high tech" character set. If you prefer the standard Atari characters, you can SWAP SETS from the menu. ▲

Beam Me Up!

Stuck inside the radioactive caverns beneath Mars— With your transporter going nuts

By Steven Ginzburg



Struggle your way back to the surface of Mars in this game that combines challenging BASIC action and easy-to-create Micro Illustrator screens. This BASIC program works on 8-bit Atari computers with at least 48K memory and disk drive.

Your one-man shuttle craft streaks through the upper atmosphere of the mysterious planet. As you watch the red surface glide past, you wonder if you'll die of radiation poisoning or return to Earth a hero. Suiting up, you ignore the computer's constant warnings of dangerous radiation levels. Radiation can have strange effects on radio transmissions and transporter beams, not to mention humans, but you'd rather die a hero than survive as a coward.

The transporter painlessly disassembles you, atom by atom, and reassembles you. . .somewhere. After several minutes your eyes adjust to the dark. Patches of radioactive mold provide an eerie, dim illumination. Oh no, you're not on the planet's surface, but miles below, in a string of caverns.

Your sensor tells you that gravity is weak and air is almost non-existent—but the radiation is very strong. Your suit will protect you, but one touch of the mold would be fatal.

Radiation makes contact with your ship impossible, and your transporter is going crazy. If you don't keep moving, you will be zapped somewhere else. You'll never get back to your ship unless you reach the surface.

GETTING STARTED

Type in Listing 1, BEAM.BAS, check it with TYPO II, and SAVE a copy to disk.

If you have trouble typing the special characters in Lines 30, 310, 336, 810-840, 860-870, 910, 1020-1045, don't type them in. Instead, type in Listing 2. When RUN, this program creates these hard-to-type lines and stores them in file called LINES.LST. To merge the two programs, type NEW, then LOAD Listing 1, "D:BEAM.BAS" and then ENTER "D:LINES.LST". Be sure to SAVE the completed program.

Listings 3 and 4 contain Micro Illustrator game screens, in BASIC loader formats. Type them in, checking them with TYPO II. When RUN,

continued on page 32

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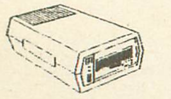
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Ad produced on an ATARI ST using CALAMUS and printed on an ATARI SLM804 PostScript compatible laser printer.

continued from page 32
these listings will create files named LEVEL1.PIC and LEVEL2.PIC (make sure you don't already have files by these names on disk).

Antic Disk users will find *nine* complete screen files already on their disk. The program will work with anywhere from one to nine screens, as long as the names have the numbered format above. When the program can't find the next screen in order, it will go to the ending routine.

PLAYING THE GAME

You start in the lower-right corner of the screen, and try to move to the hole on the left, maneuvering the little man with a joystick in port 1. In most places you will be able to move freely, left and right or up and down, following the terrain. Just be careful not to touch any of the glowing stuff!

To avoid the patches of color-shifting mold, you can jump or climb on ropes and ladders. To jump, press the button on your joystick, and move the stick left, right or up. Because of the light gravity you will jump far and fall slowly. If at any point you get stuck, press [OPTION].

ADDING SCREENS

This game uses screens created with Micro Illustrator software. You can easily make your own screens for the game. (Other picture formats can be converted to Micro Illustrator using the *Rapid Graphics Converter* in the November 1985 issue of **Antic**.)

Anything made in the first color (the default is gold) is the regular ground. If you come to a wall of this color the little man will climb right up it, automatically.

The second color (green) is used for climbable objects, such as ropes or ladders. Don't make a border in this color or your man could climb right off the screen!

The third color (blue) is the deadly material. The program makes this color glow automatically.

Save your picture as you would normally, but use the filename D:LEVELx.PIC. Be sure to replace the x with the level number you want. Level numbers can go from one to nine. The program starts with LEVEL1.PIC, then moves to LEVEL2.PIC, and so on. When the program can't find the next picture, then the game is over, and you escape.

When making your levels, there are a few things to remember. You should put a border on the screens. If you don't, the man might climb or fall out of existence. You need to leave room for the man at the lower right corner of the screen, where he begins each level. Also, be sure to leave a hole in the left border for the man to go through to finish the level.

Keep the little man's size, jump height and distance in mind. You might want to make an almost empty level to test the man's capabilities. Remember too that you only jump as long as you hold down the button. Short jumps can be useful, and as challenging as the longest jumps.

When playing, you may note that the man's feet sometimes seem to sink below the top of the ground. This effect is caused by the program's move routine. Make your ground at least four pixels deep.

Let your creativity run wild. You can make levels in fun shapes, such as animals or words. The deadly third color can take any shape—spikes, spiders, snakes or anything else you can think of.

For that matter, don't limit yourself to just gold, green and blue. These are only the default colors. Make your levels, including the backgrounds, any color you want. You can even make some things the same color as the background, so they appear invisible. Just remember that the third color will flash no matter what you do.

PROGRAM TAKE-APART

In creating this game, I used many of my favorite programming tricks, including Player/Missile graphics, string manipulation, a machine language screen loader, and many other ideas.

0-5 Initialization

10-70 Title Screen

100-260 Initialize P/M graphics

300-450 The heart of the program: reads joystick, moves the character, determines character location, and flashes the deadly stuff

500-580 Loads the screen600650 Subroutine that moves A$ to P/M area

700-749 Death routine

750-880 Set up MAIN$—screen load routine

900-990 Subroutine—Beam me up!

1000-end Win routine

Steven Ginzburg is a budding 12-year-old programmer from Aptos, California, and is an honors student at Aptos Junior High. He has been using Atari computers since he was five and currently owns three of them. This is his first appearance in **Antic**.

Listing on page 34

SOFTWARE LIBRARY

TYPING SPECIAL ATARI CHARACTERS

The Atari Special Characters and the keys you must type in order to get them are shown below:

For [CONTROL] key combination, *hold down* [CONTROL] while pressing the next key. For inverse [CONTROL] [A] through [CONTROL] [Z], press the [◪] key—or [人] on the 400/800—then *release* it before pressing the next key. (Press [◪] or [人] again to turn off inverse.) For [ESC] key combinations, press [ESC] and then *release* it before pressing the next key.

Carefully study the chart above and pay close attention to differences between lookalike characters such as the slash key's [/] and the [CONTROL] [F] symbol [◪].

NORMAL VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	CTRL ,		CTRL S
	CTRL A		CTRL T
	CTRL B		CTRL U
	CTRL C		CTRL V
	CTRL D		CTRL W
	CTRL E		CTRL X
	CTRL F		CTRL Y
	CTRL G		CTRL Z
	CTRL H		ESC ESC
	CTRL I		ESC CTRL −
	CTRL J		ESC CTRL =
	CTRL K		ESC CTRL +
	CTRL L		ESC CTRL *
	CTRL M		CTRL .
	CTRL N		CTRL ;
	CTRL O		SHIFT =
	CTRL P		ESC SHIFT CLEAR
	CTRL Q		ESC DELETE
	CTRL R		ESC TAB

INVERSE VIDEO

FOR THIS	TYPE THIS
	ESC SHIFT DELETE
	ESC SHIFT INSERT
	ESC CTRL TAB
	ESC SHIFT TAB
	人CTRL .
	人CTRL ;
	人SHIFT =
	ESC CTRL 2
	ESC CTRL DELETE
	ESC CTRL INSERT

TYPO II AUTOMATIC PROOFREADER

TYPO II automatically proofreads **Antic**'s type-in BASIC listings. Type in the listing below and SAVE a copy to disk or cassette. Now type GOTO 32000. At the prompt, type in a single program line **without the two-letter TYPO II code at the beginning**. Then press [RETURN].

Your line will reappear at the bottom of the screen. If the TYPO II code does not match the code in the magazine, then you've mistyped your line.

To call back a previously typed line, type [*], the line number, then [RETURN]. When the completed line appears, press [RETURN] again. This is how TYPO II proofreads itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000. To remove TYPO II from your program, type LIST "D:FILENAME",0,31999, then [RETURN], then NEW, then ENTER "D:FILENAME", then [RETURN]. Now you can SAVE or LIST your program to disk or cassette.

Don't type the TYPO II Codes!

```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLOSE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "↖":POSITION 11,1:? "TYPO II"
EM 32050 TRAP 32040:POSITION 2,3:? "Type in a program line"
HS 32060 POSITION 1,4:? " ":INPUT #2;LINE$:IF LINE$="" THEN POSITION 2,4:LIST B:GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LINE$(2,LEN(LINE$))):POSITION 2,4:LIST B:GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:? " ";
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
ET 32120 ? "↖":POSITION 11,1:? "TYPO II":POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3;LINE$:IF LINE$="" THEN ? "LINE ";B;" DELETED":GOTO 32050
VU 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=ANS+(C*ASC(LINE$(D,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE);CHR$(LCODE)
VG 32220 POSITION 2,13:? "If CODE does not match press RETURN and edit line above":GOTO 32050
```

STUCK INSIDE RADIOACTIVE MARTIAN CAVERNS

BEAM ME UP!

Article on page 29

LISTING 1

Don't type the TYPO II Codes!

```
YU 0 REM BEAM ME UP
BN 1 REM BY STEVEN GINZBURG
CL 2 REM (C)1989 ANTIC PUBLISHING INC.
FN 4 DIM A$(128),FN$(15)
AP 5 N=1:GOTO 100
AC 7 A$(Y,Y+9)="[illegible]":RETURN
RE 10 GRAPHICS 2:POKE 559,46:POKE 710,0:P
   OKE 53256,0:REM TITLE SCREEN
MT 12 ? :? :? :? :? "[illegible]";
TM 15 POKE 752,1:POKE 709,15:POKE 708,207
GF 17 FOR I=0 TO 10
FH 20 ? #6;"    [illegible]BEAM[illegible] [illegible]ME UP[illegible]"
IU 22 NEXT I
KT 23 POKE 53256,0
WE 25 POKE 53248,120
FJ 30 A$(99,106)="$<[illegible]<$$"
ZD 40 Y=100:GOSUB 900
XC 50 ? :? "by Steve Ginzburg":? :? "
       PRESS START"
MC 60 POKE 16,64:POKE 53774,64:REM DISBLE
   BREAK KEY
QF 70 IF PEEK(53279)=7 THEN 70:REM WAIT F
   OR START
ZY 80 RETURN
LU 100 PM=PEEK(106)-36
VX 105 GOSUB 750
SR 110 GOSUB 600
EB 120 L=0:REM INITIALIZE PM GRAPHICS
JC 170 POKE 623,2
KI 180 POKE 704,10
VU 190 POKE 53277,3
MV 200 POKE 54279,PM
TC 205 GOSUB 10
PY 210 A$(1)="[illegible]":A$(128)="[illegible]"
OZ 220 A$(2)=A$
UV 230 POKE 19,0:POKE 20,0
ZH 250 GOSUB 500:REM DRAW SCREEN
SY 260 POKE 559,46
SU 300 POKE 53278,X:POKE 53248,X:REM MOVE
   ROUTINE
YJ 302 POKE 77,0:REM STOP ATTRACT MODE
BQ 305 POKE 710,RND(0)*255
TI 310 A$(Y,Y+7)="$<[illegible]<$$":REM PUT CHARA
   CTER ON SCREEN
PK 320 IF X<46 THEN 210
RI 330 TRAP 700:MX=X-44:MY=Y*2-23
BB 332 M=(MY*160+MX)/4:R=(M-INT(M))*4:M=I
   NT(M)+SC:B=PEEK(M)
XL 334 POKE 203,R:POKE 205,B
FO 336 Z=USR(ADR("[illegible]")):REM ML ROUT
   INE - BIT DECODER
NA 338 Z=PEEK(204):TRAP 40000
UK 340 IF PEEK(53279)=3 OR PEEK(19)=19 TH
   EN GOSUB 900:GOTO 300:REM IF TIME OUT
   OR OPTION HIT
YR 350 IF Z=1 AND A=0 THEN 370
JB 360 IF Z=1 THEN GOSUB 7:Y=Y-2:GOTO 300
TA 370 POKE 53278,X
XF 380 FOR I=0 TO 5:NEXT I:A=PEEK(53252)
JY 400 IF A=0 AND (J>=7 OR J=0) THEN GOSU
   B 7:B=B+1:Y=Y+1+(B>15):SOUND 1,0,0,0:S
   OUND 0,Y,10,4:J=0:GOTO 300
PA 402 B=0:IF J>=7 THEN J=0
TJ 405 IF A>3 AND A<7 THEN 700
FH 410 IF STRIG(0)=0 THEN GOSUB 7:J=J+1:I
   F J<4 THEN Y=Y-2:SOUND 1,200-J*4,10,4
DY 415 IF STRIG(0)=1 THEN J=0:SOUND 1,0,0
   ,0
SE 420 S=STICK(0):IF S=15 THEN 445:REM RE
   AD JOYSTICK AND ADJUST X AND Y
ZS 425 GOSUB 7
VV 430 X=X+2*(S<8)-2*(S>8 AND S<13):IF  N
   OT J THEN SOUND 0,100,16,8
YS 435 IF A<>2 AND A<>3 AND A<>5 THEN 445
EW 440 Y=Y+3*(INT(S/4)*4=S-1)-2*(INT(S/2)
   =S/2):IF  NOT J THEN SOUND 0,175-Y,10,
   8
WL 445 SOUND 0,0,0,0
MN 450 GOTO 300
DX 500 GRAPHICS 8+16:DL=PEEK(560)+256*PEE
   K(561):POKE 559,0:POKE 53248,0:REM LOA
   D SCREEN
JT 502 FOR I=0 TO 199
YB 503 IF PEEK(DL+I)=15 OR PEEK(DL+I)=15+
   64 THEN POKE DL+I,PEEK(DL+I)-1
OI 504 NEXT I:SC=PEEK(88)+256*PEEK(89)
LW 505 POKE 559,0
RQ 510 L=L+1
ZU 515 TRAP 1000:IF L=10 THEN 1000
TM 520 FN$="D:LEVEL  .PIC"
TG 530 FN$(8,8)=STR$(L)
YW 540 OPEN #1,4,0,FN$
JR 545 TRAP 40000
NX 550 A=USR(ADR(MAIN$))
FF 560 X=195:Y=104
MC 565 CLOSE #1
TD 570 POKE 559,46
ZR 580 RETURN
YA 600 REM START STRING USEAGE A$
CU 610 VVTP=PEEK(134)+256*PEEK(135)
JX 620 O=(PM*256+512)-PEEK(140)-PEEK(141)
   *256
IA 630 POKE VVTP+3,INT(O/256)
GP 640 POKE VVTP+2,O-INT(O/256)*256
OZ 645 A$(1)="[illegible]":A$(128)="[illegible]":REM CLEAR A$
QC 647 A$(2)=A$
ZM 650 RETURN
OF 700 SOUND 1,0,0,0:Y=1:REM DEATH ROUTIN
   E
VT 705 FOR I=1 TO 35
TH 710 R=RND(0):POKE 704,R*255
EL 720 SOUND 0,R*255,16,8
VA 722 ON Y GOSUB 725,726,727
PO 723 GOTO 730
ZO 725 POKE 53248,X:POKE 53256,0:Y=2:RETU
   RN
EG 726 POKE 53248,X-4:POKE 53256,1:Y=3:RE
   TURN
TX 727 POKE 53248,X-12:POKE 53256,3:Y=1:R
   ETURN
GD 730 NEXT I
WM 735 SOUND 0,0,0,0
MU 745 GOTO 110
MW 750 DIM MAIN$(342):REM ML ROUTINE TO L
   OAD SCREEN
VA 760 RESTORE 800
PF 770 FOR A=1536 TO 1556
DN 780 READ B:POKE A,B
DN 790 NEXT A
GT 800 DATA 162,16,169,1,157,72,3,169,0,1
   57,73,3,32,86,228,48,1,96,104,104,96
OO 810 MAIN$="[illegible]"
FJ 820 MAIN$(55)="[illegible]"
EI 830 MAIN$(115)="[illegible]"
ET 840 MAIN$(175)="[illegible]"
UV 850 MAIN$(228)=CHR$(155)
TZ 860 MAIN$(229)="[illegible]"
OT 870 MAIN$(291)="[illegible]"
ZU 880 RETURN
VQ 900 FOR I=1+20*( NOT N) TO Y+7:REM BEA
   M ROUTINE
WT 905 SOUND 1,0,0,0
RO 910 A=USR(ADR("[illegible]")):REM GET RAN
   DOM NUMBER AND PUT IN 704
```

```
BC 920 A$(I,I)=CHR$(PEEK(704))
BQ 925 SOUND 0,I,12,10
GF 930 NEXT I
FQ 940 SOUND 0,0,0,0:POKE 704,10
JH 950 FOR I=Y+7 TO 1 STEP -1
OH 960 A$(I,I)="▩"
GN 970 NEXT I
KQ 980 POKE 704,10
YR 990 X=195:Y=105:N=1:POKE 19,0:RETURN
MO 1000 GRAPHICS 0:REM WIN GAME ROUTINE
BN 1010 POKE 559,0:POKE 712,PEEK(710)
PG 1015 POKE 752,1
FP 1020 ? "          ◩□□□□□□□□□■□□■□□□□□□□□□□◪
   "
EY 1030 ? "     ◪◩□■□□□□□□□□□□■   ■□□□□□□□□□□■□
   ◪◩"
GF 1035 ? "     ◩◪□■▤▤▤▤▤▤▤▤▤▤▤   ▤▤▤▤▤▤▤▤▤▤▤■□
   ◩◪ "
DI 1040 POKE 559,46:Y=100:A$(100)="$<▤◧▤<
   $$"
ZG 1045 POSITION 2,22:? "          ▤▤▤▤▤▤▤▤▤▤▤▤
   ▤▤▤▤▤YOU▤ESCAPED▤▤"
PY 1050 POKE 53248,120:N=1:GOSUB 900
IN 1055 POSITION 2,22:? "◘"
JD 1060 POSITION 2,0:X=100
ZR 1065 FOR N=0 TO 3
NR 1070 SOUND 0,X,8,8
VG 1080 ? "◘";
OS 1090 FOR Y=0 TO 100:NEXT Y:X=X-20:NEXT
   N
CB 1100 N=0:GOTO 110
```

LISTING 2

```
FC 10 REM BEAM ME UP, LISTING 2
BJ 20 REM BY GINZBURG
GD 30 REM (c) 1985,1988 ANTIC PUBLISHING
EV 40 REM (LINES 10-250 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IJ 50 REM CHANGE LINE 70 AS NECESSARY.)
PR 60 DIM FN$(20),TEMP$(20),AR$(93):DPL=P
   EEK(10592):POKE 10592,255
WO 70 FN$="D:LINES.LST":REM THIS IS THE N
   AME OF THE DISK FILE TO BE CREATED
RD 80 ? "■Disk or Cassette?";:POKE 764,25
   5
PY 90 IF  NOT (PEEK(764)=18 OR PEEK(764)=
   58) THEN 90
TH 100 IF PEEK(764)=18 THEN FN$="C:"
VB 110 POKE 764,255:GRAPHICS 0:? "      AN
   TIC'S GENERIC BASIC LOADER"
MY 120 ? ,"BY CHARLES JACKSON"
KB 130 POKE 10592,DPL:TRAP 200
PU 140 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LW 150 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BQ 160 AR$="":READ AR$
YC 170 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DM 180 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")      "
BK 190 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 160
MM 200 IF PEEK(195)=5 THEN ? :? :? "◘TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CM 210 IF C<LN+1 THEN ? :? "◘TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
UQ 220 IF FN$="C:" THEN ? :? " Prepare ca
   ssette, press [RETURN]"
AR 230 OPEN #1,8,0,FN$
PV 240 POKE 766,1:? #1;A$;:POKE 766,0
AL 250 CLOSE #1:GRAPHICS 0:? "■COMPLETED■
   "
JW 1000 DATA 807
QL 1010 DATA 0510480320650360400570570440
   490480540410610340360600241260240600036
   0360341550510490480320650036
ZT 1020 DATA 0400890440890430550410610340
   3606002412602406003603603405808206907
   7032080085084032067072065082
JQ 1030 DATA 0650670840690820320790780320
   830670820690690781550510510540320900610
   850830820400650680820400034
EP 1040 DATA 1691921332041652032010002400
   1007020407020405623300102414424216520
   4037205133204169003056229203
VY 1050 DATA 2010002400090702040702042302
   0302414423810409603404104105808206907
   7032077076032082079085084073
CG 1060 DATA 0780690320450320660730840320
   680690670790680690821550560490480320
   77065073078036061034104162016
TL 1070 DATA 1690071570660031692321570680
   031690001570690031690011570720031690
   00157073003169000133224032000
DF 1080 DATA 0061652242010072400132010132
   40016201026240060230224024144234034155
   056050048032077065073078036
BF 1090 DATA 0400530530410610341652321332
   340241442441652321411960022302240320
   00006165232141197002230224032
NY 1100 DATA 0000061652321411980022302240
   320000061652321411990022302240320000
   06165232141200002024144196169
WD 1110 DATA 0001332361330341550560510480
   320770650730780360400049049053041061
   034230165088133224133228165089
FA 1120 DATA 1332251332290320000061921362
   400941690001332271652320411281332351
   65232041127133226208014032000
RI 1130 DATA 0061652321332270320000061652
   321332261982261652352080280320000341
   55056052048032077065073078036
SP 1140 DATA 0400490550530410610340061652
   321332330241440471982261692551972262
   08245198227169255197227208237
PD 1150 DATA 2401830320000061652321332330
   241440191982261692551972262082381982
   27169255197227208230240034155
SL 1160 DATA 0560540480320770650730780360
   400500500570410610340961690021972342
   40082240201165233160000145224
AH 1170 DATA 0241690801012241332241690001
   012251332252302301690961972302080471
   69001197236208024024169001101
SV 1180 DATA 2281332281332241690001332361
   332301012291332291330341550560550480
   32077065073078036040050057049
LK 1190 DATA 0410610342250241440172302360
   241690401012281332241690001332301012
   29133225165235240176208149165
DQ 1200 DATA 2331600001452240241690011012
   241332241690001012251332251652352401
   51208229034155057049048032065
KW 1210 DATA 0610850830820400650680820400
   341041730102101411920020960340410410
   58082069077032071069084032082
LU 1220 DATA 0650780680790770320780850770
   660690820320650780680320800085084032
   073078032055048052155049048050
DA 1230 DATA 0480320630320340320320320320
   320320060130130130130130130131600130
   13160013013013013013013
ST 1240 DATA 0130130070320320320320341550
   490480510480320630320340320320320080
   10014160014014014014014014
BY 1250 DATA 0141600320321600140140140140
   140140140140141600140080100341550490
   48051053032063032034032032032
LP 1260 DATA 1361380131600180180180180180
   180180180050320320170180180180180180
   18018018018160013136138032034
JE 1270 DATA 155
```

LISTING 3

```
CA 10 REM LOADER FOR LEVEL1.PIC
OQ 20 REM BY STEVEN GINZBURG
GD 30 REM (c) 1985,1988 ANTIC PUBLISHING
EV 40 REM (LINES 10-250 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IJ 50 REM CHANGE LINE 70 AS NECESSARY.)
PR 60 DIM FN$(20),TEMP$(20),AR$(93):DPL=P
   EEK(10592):POKE 10592,255
TT 70 FN$="D:LEVEL1.PIC":REM THIS IS THE
   NAME OF THE DISK FILE TO BE CREATED
RD 80 ? "■Disk or Cassette?";:POKE 764,25
   5
PY 90 IF  NOT (PEEK(764)=18 OR PEEK(764)=
   58) THEN 90
TH 100 IF PEEK(764)=18 THEN FN$="C:"
VB 110 POKE 764,255:GRAPHICS 0:? "      AN
   TIC'S GENERIC BASIC LOADER"
MY 120 ? ,"BY CHARLES JACKSON"
KB 130 POKE 10592,DPL:TRAP 200
PU 140 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LW 150 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BQ 160 AR$="":READ AR$
```

```
YC 170 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DM 180 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")      "
BK 190 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 160
MM 200 IF PEEK(195)=5 THEN ? :? :? "TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CM 210 IF C<LN+1 THEN ? :? "TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
UQ 220 IF FN$="C:" THEN ? :? " Prepare ca
   ssette, press [RETURN]"
AR 230 OPEN #1,8,0,FN$
PV 240 POKE 766,1:? #1;A$;:POKE 766,0
AL 250 CLOSE #1:GRAPHICS 0:? " COMPLETED 
   "
JM 1000 DATA 2119
QU 1010 DATA 25512820119902600000010010140
   0004000001920260402040120000700080000000
   155155155155162020000076005
EF 1020 DATA 01900012900107600501800012900
   0407708501800012902107708500206313001 5
   012015000129080010085002090
ZV 1030 DATA 008085002245129241045240003 2
   4300425512912700206312901501500012906 4
   011085131089085090007085002
SR 1040 DATA 245129241045240002243005255 1
   291270032550030631290030020150110001 29
   064009085002166129102011085
BE 1050 DATA 129021002005129001030000003 0
   030002015003063013255134015063015003063
   003011000129084009085131086
IN 1060 DATA 102166011085131021005001031 0
   000002003003015002063018255130252192012
   000129064008085131169085089
QN 1070 DATA 016085130021001020000000201 50
   030630162550022450022130062551302522 40
   013000129080009085130105169
NR 1080 DATA 015085130021005020000000301 50
   020630162551332532452130852130042551 30
   240192017000129084027085129
CJ 1090 DATA 016021000004192002208002212 1
   292130140850032551302401920170001290 64
   027085129084021000004192002
NL 1100 DATA 208003212129213014085004255 1
   300630150180001290800070851290870160 85
   129080033000003064002080002
AI 1110 DATA 084006085004255129063019000 0
   070850020870150851300840640330000020 64
   003080002084006085006255129
KB 1120 DATA 063002015016000129064004085 1
   290950032551290870110851300840640400 00
   002001130005021004085005255
DL 1130 DATA 129063002015017000129084003 0
   851300871270022551290950120851300800 64
   040000129001002005129021004
NH 1140 DATA 085007255130252192015000002 2
   551292530082551290870080851300800640 17
   000008003012000134003015207
YU 1150 DATA 063095087007085006255130252 2
   400160001292550022530072551291270080 85
   130084080017000008003013000
LP 1160 DATA 134003015255063095087007085 0
   042551302431920190001290200060851292 45
   003255129095006085007031003
BU 1170 DATA 063003127015255010000129060 0
   072551292150060850042551292430200000 07
   085129253003255007085006031
CC 1180 DATA 003063004127014255010000129 0
   600072551302472130060850062551290150 19
   000002080005085129213002255
TE 1190 DATA 129253006085002095129087024 2
   550130001311922402520022551312532451 17
   005085005255130063003019000
NJ 1200 DATA 130080084005085130253255002 2
   530050851310870950870252550120001311 92
   240252002255002253129245006
ZF 1210 DATA 085008255002015130003015017 0
   000020640110850032550032431292400032 52
   004255129252013255017000130
UD 1220 DATA 064080002084005085007255133 0
   630150030150030160000020641290800100 85
   129095002255129195002243129
NC 1230 DATA 240004252017255018000131064 0
   800840060850102550032520190001290840 08
   085003255132192252255207008
EC 1240 DATA 000003192130240252008255006 0
   000040150020071290230060210080850092 55
   003252129048018000129080008
CV 1250 DATA 085129095003255129240002255 0
   080000031920022400092550050000040150 03
   007006021009085008255129240
```

```
KO 1260 DATA 02400012908000608500225300 22
   550030630040150030030080001292400052 55
   129252008000003192003240002
IZ 1270 DATA 25213012412700309500308700 30
   850072551302521920230001290640070851 29
   253002255004063003015004003
BH 1280 DATA 00700013019225200525500900 00
   031920032401302521240021270030950030 87
   003085005255130243192027000
YP 1290 DATA 12906400608500225500419200 62
   401291920290000040150020631292550022 07
   002255129245006255129192028
QB 1300 DATA 00012908400508513108725524 00
   041920062401291920090001291920190000 04
   015130063255002207003255129
VV 1310 DATA 24500725512924002800012906 40
   040851310952552070030150360000050601 29
   063006255129085007255029000
FR 1320 DATA 12908000408500225500401503 50
   000006060129063005255002085008255002 015
   028000129084002085130241240
QD 1330 DATA 02400012902101700000524300 52
   551290850072550020151290030270001290 64
   003085129240024000002021016
QV 1340 DATA 00012900300424300525500208 50
   122550270001300801060020321290420020 32
   131042032042002032131042032
EW 1350 DATA 04200203213104203204200203 21
   310420320420020321300420850150000020 15
   004207006255129085011255129
VP 1360 DATA 06302700013008410600203213 10
   420320420020321310420320420020321310 42
   032042002032131042032042002
DI 1370 DATA 03213104203204200208501500 01
   290150052070052551301170850022551292 53
   009255002015002255129015023
WZ 1380 DATA 00012917000200012917000200 01
   311700001700020001311700001700020001 31
   170000170002000131170000170
MS 1390 DATA 00200013017008501600000306 00
   030630042551301270850122551330150632 55
   063003023000129170002000131
EX 1400 DATA 17000017000200013117000017 00
   020001311700001700020001311700001700 02
   000131170000170002085015000
RY 1410 DATA 00406000306300425513008708 50
   152550022521291920220000271281290850 14
   005009001002193002213129085
LB 1420 DATA 01525513025224002300002612 80
   020850140050090010021930022131290850 11
   255129243002192053000129080
UE 1430 DATA 00209500208702408501025500 22
   431291920530000020800020951290870250 85
   010255130252192054000002001
HK 1440 DATA 00325300225500212712909500 20
   870190850092551292400550000020010022 53
   003255129127002095002087019
UA 1450 DATA 08500925500201505400000808 50
   032130032451291250020931290870130850 08
   255002015129003054000007085
XB 1460 DATA 00321300324500212512909300 20
   870130850112551310630030150510000310 85
   011255129015002003051000031
YR 1470 DATA 08502025500206300200312901 50
   030003039000006255002253002125004117 012
   085002084129085019255003063
VL 1480 DATA 00500304000000525500325312 91
   250041170120850020840020850302551300 63
   015005063129015002003025000
EM 1490 DATA 00202100324501508500208400 20
   800020640040001290850292551300630150 04
   063130015063003003024000129
MG 1500 DATA 00100202100324501508500208 41
   290800020640040000020850382550022520 03
   255129063020000129021013085
PG 1510 DATA 00208412908000206401200012 90
   850372550032520022551300630120190001 29
   001013085002084002080002064
CG 1520 DATA 01100000208501125512922301 62
   551302522550022521302401920290001290 21
   006085002084002080002064013
AN 1530 DATA 00000200300201513100102108 50
   292550032520021920280001290010070850 02
   084129080002064013000002003
IJ 1540 DATA 00201513000300100208502225 50
   032520022401291920350000030800020640 15
   000002015002063004255002253
JX 1550 DATA 12921300208502125500425213 02
   401920350000040800020640140001290030 02
   015002063004255130253245003
AW 1560 DATA 08500425512920600319400200 20
   021940082421291940540020060001290150 02
   255002253002245131212084080
```

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QR 1570 DATA 0020641290000020850042551292
   0600319412900200219400924205500200500O
   131003063255002253002245130
DS 1580 DATA 2132120020801290640020000020
   8500425500319113014313106612800400012 9
   01500225513124508508000206 4
IW 1590 DATA 0060001310631270950042550031
   9112914306712800300013400306325525321 3
   084002064002000134003000003
HH 1600 DATA 0000600150020950082551302431
   9500300306200012900100200513321325324 5
   085080000400013000324301425 5
TT 1610 DATA 1302431950030030610000030011
   3500502124525321308506400500002825500 7
   063007015007003032000010085
DM 1620 DATA 0030001292520282550080630070
   1500700303100012902100908512900500300 0
   043255002252002240002192034
HR 1630 DATA 0000100851290160030000041921
   2925203625500225200324000219203300012 9
   080009085129084004000003192
IJ 1640 DATA 1292400292550022520022400021
   9204300012908000308512908400208012906 4
   011000002192130213085023255
LG 1650 DATA 0022520032400021920430000020
   8412908500208412908000206401100000219 2
   002085012255002253131245252
WS 1660 DATA 2440022400021920730000020850
   1125500225312924500225200324000219207 3
   000002085009255129218002074
VU 1670 DATA 0790100030000020850092551290
   9000207407801000400000208500925513008 5
   020083000002085009255130084
MF 1680 DATA 0160830000020850062551312522
   5520703301505000313000102100208500825 5
   033015051003129005003085092
SH 1690 DATA 2551290950030850922551290870
   03085
```

LISTING 4

```
CY 10 REM LOADER FOR LEVEL2.PIC
OQ 20 REM BY STEVEN GINZBURG
GD 30 REM (c) 1985,1988 ANTIC PUBLISHING
EV 40 REM (LINES 10-250 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IJ 50 REM CHANGE LINE 70 AS NECESSARY.)
PR 60 DIM FN$(20),TEMP$(20),AR$(93):DPL=P
   EEK(10592):POKE 10592,255
UJ 70 FN$="D:LEVEL2.PIC":REM THIS IS THE
   NAME OF THE DISK FILE TO BE CREATED
RD 80 ? "▯Disk or Cassette?";:POKE 764,25
   5
PY 90 IF  NOT (PEEK(764)=18 OR PEEK(764)=
   58) THEN 90
TH 100 IF PEEK(764)=18 THEN FN$="C:"
VB 110 POKE 764,255:GRAPHICS 0:? "     AN
   TIC'S GENERIC BASIC LOADER"
MY 120 ? ,"BY CHARLES JACKSON"
KB 130 POKE 10592,DPL:TRAP 200
PU 140 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LW 150 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BQ 160 AR$="":READ AR$
YC 170 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DM 180 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")   "
BK 190 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 160
MM 200 IF PEEK(195)=5 THEN ? :? :? "▯TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CM 210 IF C<LN+1 THEN ? :? "▯TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
UQ 220 IF FN$="C:" THEN ? :? " Prepare ca
   ssette, press [RETURN]"
AR 230 OPEN #1,8,0,FN$
PV 240 POKE 766,1:? #1;A$;:POKE 766,0
AL 250 CLOSE #1:GRAPHICS 0:? "█COMPLETED█
   "
KT 1000 DATA 1393
NL 1010 DATA 2551282011990260000010010140
   0004000019202604020401200011200500000 0
   155155155162131255095085
IE 1020 DATA 0160000080850330870360851291
   2700208501500000908503308703608500225 5
   129084016000002084006085070
YR 1030 DATA 2550020840150000020840070850
   7125501900000308500308402000000208401 1
   000018192002212013192003213
IQ 1040 DATA 1292550190000040850030840200
   0012908401100001819200221201419200321 3
   002255091000003085129255092
AP 1050 DATA 0000030850022550090000361600
   0216412916802804000210500804000500000 3
   085129255009000037160129164
XW 1060 DATA 0021680270400021050080400060
   0000308500225502200000200106700000308 5
   129255022000003001067000003
AA 1070 DATA 0850022550220000020850210000
   0208502900000202101300000308512925502 2
   000003085021000129085029000
JT 1080 DATA 0020210140000030850022550220
   6300212702106313012709502901500209500 2
   015011000003085129255022063
AO 1090 DATA 0031270210631291270290150020
   9500301501100000308500225502024000224 5
   023240130245253029252002253
LX 1100 DATA 0022520110000030851292550212
   4000224502324012925303025212925300325 2
   011000003085002255020000002
BI 1110 DATA 0800230000021270290000021270
   1300000308512925502100000208002300012 9
   127029000130003127014000003
MJ 1120 DATA 0850022550080000370020022550
   2900021302541940080020050000030851292 55
   008000038002130255003028002
WN 1130 DATA 0022540090020050000030850022
   5500800003712813019225502912813019113 1
   008128005000003085129255008
LN 1140 DATA 0000381280022550281280021910
   0912800500000308500225502000000200502 3
   000130005253029000002253013
EB 1150 DATA 0000030851292550210000020050
   2300013025325202800013019225301400000 3
   085002255020000002085023000
TF 1160 DATA 1300850870080030210000020850
   1300000308512925502100000208502300012 9
   087009003021000129085014000
DO 1170 DATA 0030850022550050150150000021
   2700806302525502100013008508401300000 3
   085129255006015015000002127
UT 1180 DATA 0070630262550210001290850140
   0000308500225500525201500000224500824 0
   014208002213129085029000129
QE 1190 DATA 0850140000030851292550062520
   1500012924500924001420800221302900013 0
   021085014000003085002255020
PZ 1200 DATA 0000020850220000030850290001
   2908501400000308512925502100012908502 3
   000002085029000002085014000
MT 1210 DATA 0030850022550200000020850220
   0000308502900012908501400000308512925 5
   021000129085023000002085029
EG 1220 DATA 0000020850140000030850022550
   2000000206402200000306402900012906401 4
   000003085129255021000129064
PO 1230 DATA 0230000020640290000020640140
   0000308500225501000007501000600000308 5
   129255010000076010006000003
XC 1240 DATA 0850022550910000030851292550
   9200000308500225502000000202102200000 3
   021029000129021014000003085
DO 1250 DATA 1292550210001290210230000020
   2102900000202101400000308500225502000 0
   002085022000003085029000129
QS 1260 DATA 0850140000030851292550210001
   2908502300000208502900000208501400000 3
   085002255020015002095005015
QQ 1270 DATA 0170000020851291270290631291
   2701406300308512925502101512909500601 5
   017000002085029063002127014
KG 1280 DATA 0630030850022550202520022530
   0525201700000208502924000224501424000 3
   085129255021252129253006252
AY 1290 DATA 0170000020850292401292450152
   4000308500225513300001501200001501500 0
   002085022000002085029000002
RV 1300 DATA 0850140000030851292550020001
   3001201501700012908502300000208502900 0
   129085015000003085002255133
YI 1310 DATA 0002430030512430400001292550
   4500000308512925500200013100324305104 0
   000002255045000003085002255
PW 1320 DATA 1330002550000632550060000330
   4013006325503804000700000308512925500 4
   000129003006000034040130255
IP 1330 DATA 2520380400070000030850022550
   4400000225504500000308512925504500012 9
   255046000003085002255020000
DL 1340 DATA 0020850220000020850290000020
   8501400000308512925502100012908502300 0
```

```
   0020850290001290850150000003
EV 1350 DATA 085028255018000002085007021O
   2200000209501401500308502825501700012 9
```

BE PREPARED FOR THOSE ANNUAL SAVINGS CHOMPERS

BUDGETIZER

Article on page 18

LISTING 1

Don't type the TYPO II Codes!

```
FJ 1 REM BUDGETIZER.V4 BY L. BRILLIANT M.
   D. 3/22/89
QO 2 REM (c) 1989, ANTIC PUBLISHING INC.
HJ 10 DIM ARRAY(59,11),ARRAY$(1),DUMMY$(1
   6),CAT$(96),FIELD$(420),LINE$(132),PR$
   (20),TOTAL(11),WIDE$(1),BLANK$(72)
HS 20 DIM RESERVE(11):DUMMY$="D1:BUDGET.D
   AT":OPEN #1,4,0,"K:"
XR 30 ? "■ <1> DISK DRIVE OR <2>?";
WZ 40 GET #1,K:IF K<49 OR K>50 THEN 40
KM 50 DRIVE=K:DUMMY$(2,2)=CHR$(DRIVE):GOS
   UB 10000:GOTO 100
EG 90 POKE 703,4:? "■PRESS SELECT TO CHOO
   SE.  PRESS RETURN":? "AFTER EDITING. N
   O CHANGE WIHOUT"
NC 91 ? "RETURN.  PRESS ESC TO GO BACK.":
   POKE 703,24:RETURN
ZX 95 POSITION COL,ROW:GET #6,X:POSITION
   COL,ROW:? CHR$(X+128*(X<128)):RETURN :
   REM CURSOR ON
NK 96 POSITION COL,ROW:GET #6,X:POSITION
   COL,ROW:? CHR$(X-128*(X>127)):RETURN :
   REM CURSOR OFF
XE 100 ? "■  ■ANTIC'S■BUDGETIZER■":? :? "
   1. PRINT BUDGET":? :? "2. EDIT":? :? "
   3. SAVE":? :? "4. QUIT"
OA 110 POKE 755,2:POKE 752,0:? :? "CHOOSE
    ONE";
OT 120 GET #1,K:IF K<49 OR K>52 THEN 120
FI 130 ? :ON K-48 GOTO 5000,2000,6000,700
   0
VI 999 STOP
YW 2000 REM EDIT CATEGORIES
DL 2010 POKE 755,2:POKE 752,1:? "■       *
   * EDIT CATEGORIES **"
RA 2011 ? :? "  ┌───────────────┐":FOR RO
   W=3 TO 8:POSITION 4,ROW:? "│":POSITION
    20,ROW:? "│":NEXT ROW
TN 2012 POSITION 4,9:? "└───────────────┘
   ":GOSUB 90
UZ 2020 CAT=INT(LEN(CAT$)/16):SIZE=15:FN=
   6:COL=5:ROW=3:ASCII=32:ASCII2=90:IF CA
   T=0 THEN 2040
NM 2030 FOR N=0 TO CAT-1:POSITION 5,N+3:?
    CAT$(N*16+1,N*16+15):NEXT N
GW 2040 GOSUB 95:GOSUB 2050:GOTO 2300
GH 2050 POKE 764,255
TY 2051 IF PEEK(53279)=5 THEN V=1:RETURN
XM 2052 IF PEEK(764)=255 THEN 2051
IK 2058 GET #1,K
SI 2060 IF PEEK(694)=128 THEN POKE 694,0:
   K=K-128
OX 2070 IF PEEK(702)<>64 THEN POKE 702,64
   :K=K-32
FL 2080 IF K=155 THEN V=2:RETURN
QV 2090 IF K=27 THEN V=3:RETURN
UF 2095 IF K=126 AND COL>5 THEN GOSUB 96:
   COL=COL-1:POSITION COL,ROW:? "■":GOTO
   2050
QE 2100 IF K=30 AND COL>5 THEN GOSUB 96:C
   OL=COL-1:GOSUB 95:GOTO 2050
QA 2110 IF K=31 AND COL<SIZE+4 THEN GOSUB
    96:COL=COL+1:GOSUB 95:GOTO 2050
ON 2120 IF K=28 AND ROW>3 THEN GOSUB 96:R
   OW=ROW-1:GOSUB 95:GOTO 2050
KL 2130 IF K=29 AND ROW<FN+2 THEN GOSUB 9
   6:ROW=ROW+1:GOSUB 95:GOTO 2050
JA 2140 IF K<ASCII OR K>ASCII2 THEN 2050
RR 2150 POSITION COL,ROW:? CHR$(K):COL=CO
   L+1*(COL<SIZE+4):GOSUB 95:GOTO 2050
LC 2300 Z=ROW-3:ON V GOTO 2900,2350,100
SF 2350 GOSUB 2500:GOTO 2000
DA 2500 GOSUB 96:POKE 703,4:? "■
   PROCESSING":POKE 703,24
EW 2510 Q=0:FOR N=1 TO 6:POSITION 4,N+2:?
    "■■":POSITION 5,N+2:Q=Q+1
XS 2520 FOR S=1 TO 15:GET #6,X:DUMMY$(S)=
   CHR$(X):NEXT S:POKE 755, NOT (PEEK(755
   ))*2
BV 2530 IF N>CAT THEN GOSUB 2600:GOTO 258
   0
BS 2540 IF DUMMY$=CAT$(Q*16-15,Q*16-1) TH
   EN 2580
EA 2550 IF DUMMY$="               " THEN
   POKE 755,2:GOSUB 2650:GOTO 2580
UL 2560 CAT$(Q*16-15,Q*16-1)=DUMMY$
PE 2580 POSITION 4,N+2:? "│":NEXT N
BL 2590 RETURN
QY 2600 IF DUMMY$="               " THEN
   Q=Q-1:RETURN
YK 2610 DUMMY$(16,16)=CHR$(0):CAT$(LEN(CA
   T$)+1)=DUMMY$
SO 2620 ARRAY$(CAT*720+1)="■":ARRAY$((CAT
   +1)*720)="■":ARRAY$(CAT*720+2)=ARRAY$(
   CAT*720+2)
WT 2630 CAT=CAT+1:RETURN
OU 2650 POKE 703,4:? "■DELETING A CATEGOR
   Y WILL ALSO DELETE  ITS FIELDS AND REC
   ORDS.  PRESS RETURN TO DELETE, ESC";
KT 2660 ? " TO ABORT."
HW 2670 GET #1,K
TA 2680 IF K=27 THEN POP :POP :POKE 703,2
   4:GOTO 2000
AI 2690 IF K<>155 THEN 2670
QQ 2720 X=N-1
LS 2730 Q=Q-1:IF X=CAT-1 THEN CAT$(X*16+1
   )="":GOTO 2740
WL 2735 CAT$(Q*16+1)=CAT$(Q*16+17)
EG 2736 FIELD$(Q*70+1)=FIELD$(Q*70+71):FI
   ELD$(351)=" ":FIELD$(420)=" ":FIELD$(3
   52)=FIELD$(351)
MI 2738 IF Q=5 THEN ARRAY$(3601)="":GOTO
   2750
NA 2740 ARRAY$(Q*720+1)=ARRAY$(Q*720+721)
```

```
QG 2750 ? "}":POKE 703,24:RETURN
UZ 2900 GOSUB 96:IF Z<CAT THEN 3000
DO 2910 IF PEEK(53279)=5 THEN 2910
PY 2920 GOTO 2040
VV 3000 REM EDIT FIELDS
OM 3010 POKE 755,2:POKE 752,1:? "}
   ** EDIT FIELDS **"
NJ 3011 ? :? "  ┌─────────┐":FOR ROW=3 TO 1
   2:POSITION 4,ROW:? "|":POSITION 12,ROW
   :? "|":NEXT ROW
PN 3012 ? "  └─────────┘":GOSUB 90
GK 3020 NF=ASC(CAT$(Z*16+16,Z*16+16)):SIZ
   E=7:FN=10:COL=5:ROW=3:ASCII=32:ASCII2=
   90:IF NF=0 THEN 3040
KD 3030 FOR N=0 TO NF-1:POSITION 5,N+3:?
   FIELD$(Z*70+N*7+1,Z*70+N*7+7):NEXT N
MN 3040 GOSUB 95:GOSUB 2050
CI 3300 CHOICE=ROW-3:ON V GOTO 3900,3350,
   2000
TO 3350 GOSUB 3500:GOTO 3000
DB 3500 GOSUB 96:POKE 703,4:? "}
   PROCESSING":POKE 703,24
ML 3510 Q=0:FOR N=1 TO 10:POSITION 4,N+2:
   ? "←→":POSITION 5,N+2:Q=Q+1
BQ 3520 FOR S=1 TO 7:GET #6,X:DUMMY$(S)=C
   HR$(X):NEXT S:POKE 755, NOT (PEEK(755)
   )*2
RO 3530 IF DUMMY$=FIELD$(Z*70+Q*7-6,Z*70+
   Q*7) THEN 3580
LZ 3540 IF N>NF THEN GOSUB 3600:GOTO 3580
XV 3550 IF DUMMY$="       " THEN POKE 755
   ,2:GOSUB 3650:GOTO 3580
SO 3560 FIELD$(Z*70+Q*7-6,Z*70+Q*7)=DUMMY
   $
PF 3580 POSITION 4,N+2:? "|":NEXT N
BM 3590 RETURN
JT 3600 IF DUMMY$="       " THEN Q=Q-1:RE
   TURN
XP 3620 FIELD$(Z*70+Q*7-6,Z*70+Q*7)=DUMMY
   $:NF=NF+1:CAT$(Z*16+16,Z*16+16)=CHR$(N
   F):RETURN
TP 3650 FIELD$(Z*70+Q*7-6,(Z+1)*70)=FIELD
   $(Z*70+Q*7+1,(Z+1)*70):FIELD$(Z*70+64,
   Z*70+70)="       "
CZ 3660 ARRAY$(Z*720+Q*72-71,(Z+1)*720)=A
   RRAY$(Z*720+Q*72+1,(Z+1)*720):ARRAY$(Z
   *720+648,Z*720+720)=BLANK$
WZ 3670 NF=NF-1:CAT$(Z*16+16,Z*16+16)=CHR
   $(NF):Q=Q-1:RETURN
AI 3900 GOSUB 96:IF CHOICE<NF THEN 4000
ER 3910 IF PEEK(53279)=5 THEN 3910
QK 3920 GOTO 3040
IL 4000 REM EDIT DATA
BY 4010 POKE 755,2:POKE 752,1:? "}        *
   * EDIT DATA **"
FL 4011 ? :? "  ┌────────┐":FOR ROW=3 TO 14
   :POSITION 4,ROW:? "|":POSITION 11,ROW:
   ? "|":NEXT ROW
GG 4012 POSITION 4,15:? "└────────┘":GOSUB
   90
VE 4015 DATA JAN,FEB,MAR,APR,MAY,JUN,JUL,
   AUG,SEP,OCT,NOV,DEC
WU 4016 RESTORE 4015:FOR ROW=3 TO 14:READ
    DUMMY$:POSITION 12,ROW:? DUMMY$:NEXT
   ROW
IQ 4020 AR=Z*10+CHOICE:FOR N=0 TO 11:POSI
   TION 5,N+3:? ABS(ARRAY(AR,N)):NEXT N
PK 4030 SIZE=6:FN=12:COL=5:ROW=3:ASCII=48
   :ASCII2=58
MO 4040 GOSUB 95:GOSUB 2050
YH 4300 GOSUB 96:ON V GOTO 4040,4350,3000

UX 4350 GOSUB 4500:GOTO 4000
DC 4500 GOSUB 96:POKE 703,4:? "}
   PROCESSING":POKE 703,24
OG 4510 FOR N=1 TO 12:POSITION 4,N+2:? "←
   →":POSITION 5,N+2
BA 4520 FOR S=1 TO 6:GET #6,X:DUMMY$(S)=C
   HR$(X):NEXT S:POKE 755, NOT (PEEK(755)
   )*2
RH 4530 ARRAY(AR,N-1)=VAL(DUMMY$):POSITIO
   N 4,N+2:? "|":NEXT N
SF 4540 FOR N=1 TO 11:IF ARRAY(AR,0)<>ARR
   AY(AR,N) THEN 4560
JC 4550 NEXT N:RETURN
US 4560 POP :FOR N=0 TO 11:ARRAY(AR,N)=AR
   RAY(AR,N)*-1:NEXT N:RETURN
UM 5000 REM PRINT
MS 5005 TRAP 11200:OPEN #2,8,0,"P:"
QB 5010 ? "}           ** PRINTING **":? :?
BS 5020 ? "ENTER TODAY'S DATE: ":INPUT DU
   MMY$:POKE 752,1:?
QY 5030 ? #2;PR$:? #2:? #2;WIDE$;"BUDGET
   PRINTED ";DUMMY$:? #2
YP 5040 ? #2;"                JAN          FEB
      MAR         APR         MAY          JUN
        JUL         AUG         SEP";
AK 5050 ? #2;"           OCT         NOV
   DEC"
YJ 5060 FOR N=0 TO CAT-1:? #2;WIDE$;CAT$(
   N*16+1,N*16+15)
RF 5070 NF=ASC(CAT$(N*16+16)):IF NF=0 THE
   N 5100
BD 5080 FOR S=0 TO NF-1:AR=N*10+S:? #2;"
   ";FIELD$(AR*7+1,AR*7+7),:FOR X=0 TO 11
   :? #2;ABS(ARRAY(AR,X)),:NEXT X:? #2
EI 5090 NEXT S:NEXT N
IC 5100 POKE 703,4:? "}          PROCESSIN
   G":POKE 703,24:? #2;LINE$
TA 5110 TOTALP=0:TOTALN=0:R=0:FOR X=0 TO
   11
UA 5120 FOR N=0 TO CAT*10
NL 5130 D=ARRAY(N,X):IF D<0 THEN TOTALN=T
   OTALN+D
SH 5140 IF D>0 THEN TOTALP=TOTALP+D
MW 5150 NEXT N:TOTAL(X)=TOTALN*-1:R=R+TOT
   ALN:TOTALN=0:POKE 755, NOT (PEEK(755))
   *2
MR 5200 NEXT X:FIXED=INT(TOTALP/12):PERIO
   DIC=R/12*-1
IZ 5210 ? #2;"FIXED",:FOR N=0 TO 11:? #2;
   INT(FIXED),:NEXT N:? #2
CZ 5220 ? #2;"PERIOD",:FOR N=0 TO 11:? #2
   ;TOTAL(N),:NEXT N:? #2
CU 5230 ? #2;LINE$:? #2;"TOTAL",:FOR N=0
   TO 11:? #2;INT(TOTAL(N)+FIXED),:NEXT N
   :? #2
NG 5240 RESERVE=0:FOR N=0 TO 11:RESERVE=R
   ESERVE-TOTAL(N)+PERIODIC:RESERVE(N)=RE
   SERVE:NEXT N
TR 5250 X=0:FOR N=0 TO 11:IF RESERVE(N)<X
    THEN X=RESERVE(N)
IJ 5255 NEXT N
HN 5260 IF X<0 THEN FOR N=0 TO 11:RESERVE
   (N)=RESERVE(N)-X:NEXT N
UU 5270 ? #2:? #2;"RESERVE",:FOR N=0 TO 1
   1:? #2;INT(RESERVE(N)),:NEXT N:? #2
MM 5280 ? #2:? #2;"MIN MONTHLY INCOME=";F
   IXED+PERIODIC,,"BALANCE       ________
   _________":? #2
MX 5290 ? #2,,,,"BILLS DUE        -__________
   ______":? #2:? #2,,,,"BILLS OUT      +__
   _______________":? #2
SV 5300 ? #2,,,,"RESERVE           -__________
   ______":? #2
UE 5310 ? #2,,,,"AVAIL BALANCE    __________
   ______"
XC 5380 ? #2;CHR$(12):CLOSE #2:GOTO 100
WT 6000 REM SAVE
PD 6010 POKE 752,1:? "}          ** SAVING T
   O DISK **"
TP 6015 DUMMY$="D1:BUDGET.DAT":DUMMY$(2,2
   )=CHR$(DRIVE)
GX 6020 TRAP 11300:OPEN #3,8,0,DUMMY$
JN 6030 PRINT #3;CAT$:? #3;FIELD$(1,CAT*7
   0):? #3;ARRAY$(1,CAT*720)
OA 6040 CLOSE #3
NM 6050 GOTO 100
FZ 7000 REM QUIT
NE 7010 ? "}DATA NOT SAVED.  QUIT? <Y/N>"

DN 7020 GET #1,K:IF K=78 THEN 100
AT 7030 IF K<>89 THEN 7020
KV 7050 ? "}BUDGETIZER":END
NJ 10000 VVTP=PEEK(134)+256*PEEK(135):POK
   E VVTP+10,PEEK(VVTP+2):POKE VVTP+11,PE
   EK(VVTP+3)
EM 10020 POKE VVTP+14,224:POKE VVTP+15,16

MQ 10030 ARRAY$(1)="♥":ARRAY$(4320)="♥":A
   RRAY$(2)=ARRAY$:BLANK$=ARRAY$:FIELD$=A
   RRAY$
WW 10035 LINE$(1)="_":LINE$(132)="_":LINE
   $(2)=LINE$
XB 10040 OPEN #6,12,0,"S"
AV 10045 TRAP 11000:OPEN #2,4,0,DUMMY$
LP 10050 INPUT #2;CAT$:CAT=INT(LEN(CAT$)/
   16)
WT 10060 AD=ADR(FIELD$):HI=INT(AD/256):LO
   =AD-HI*256:POKE 866,7:POKE 868,LO:POKE
    869,HI
JA 10065 AD=CAT*70:HI=INT(AD/256):LO=AD-H
   I*256:POKE 872,LO:POKE 873,HI
UZ 10070 FIELD$(AD)=" ":A=USR(ADR("h  LV
   ")):GET #2,X:IF X<>155 THEN 11100
```

```
OX 10080 AD=ADR(ARRAY$):HI=INT(AD/256):LO
   =AD-HI*256:POKE 866,7:POKE 868,LO:POKE
    869,HI
HM 10085 AD=CAT*720:HI=INT(AD/256):LO=AD-
   HI*256:POKE 872,LO:POKE 873,HI
VC 10090 A=USR(ADR("h[illegible] LV[illegible]")):CLOSE #2
XL 10110 WIDE$=CHR$(14):PR$="[illegible]"
VW 10120 LINE$(1)="_":LINE$(132)="_":LINE
   $(2)=LINE$
DD 10200 RETURN
ES 11000 CLOSE #2:IF PEEK(195)<>170 THEN
   11020
JY 11010 CAT=0:GOTO 10110
GN 11020 ? "[illegible]DISK ERROR #";PEEK(195);". P
   RESS ANY KEY.":GET #1,K:GOTO 10045
QK 11100 CLOSE #2:? "[illegible]SOMETHING IS WRONG
   WITH THE DATA FILES.":? "ERASE 'BUDGET
   .DAT AND RESTART.":END
BS 11200 ? "[illegible]PRINTER ERROR. PRESS ANY KEY
   .":GET #1,K:GOTO 100
VS 11300 CLOSE #3:? "[illegible]DISK ERROR #";PEEK(
   195);". PRESS ANY KEY.":GET #1,K:GOTO
   100
```

IMPROVING A POWERFUL BASIC SPEED-UP TOOL

SUPER BOTTLENECK BREAKER

Article on page 25

LISTING 1

```
SM 10 REM BASIC PROFILER, PART 1
JH 20 REM BY STAN LACKEY
ST 30 REM XE VERSION BY ERIC WOODRUFF
IF 40 REM (c) 1989, ANTIC PUBLISHING
BC 50 REM
WE 60 REM If reserving memory, remove REM
    on line 80 and add REM to line 100.
UA 70 REM Don't drop number of pages rese
   rved below 16! It's the minimum reserv
   ation so as not to cause problems.
GG 80 REM START=PEEK(106)*256-105:POKE 10
   6,PEEK(106)-16:POKE 740,PEEK(106)
AJ 90 REM Otherwise, use the following li
   ne. Place the address after "START="
ML 100 START=1536
GG 110 GRAPHICS 0:? :? "           Loading P
   rofiler...."
NG 120 FOR I=START TO START+101:READ A:PO
   KE I,A:NEXT I
ZN 130 DATA 173,254,4,240,95,152,72,173,1
   ,211,72,160,0,177,138,133,208,200,177,
   138,48,67,10,24,6,208,105
KL 140 DATA 0,201,64,176,4,160,0,240,18,2
   01,128,176,4,160,1,208,10,201,192,176,
   4,160,2,208,2,160,3
SR 150 DATA 41,63,9,64,133,209,152,10,10,
   24,105,193,141,1,211,160,0,177,208,24,
   105,1,145,208,144,14,200
ZW 160 DATA 177,208,105,0,145,208,208,5,1
   69,0,141,254,4,104,141,1,211,104,168,1
   04,64
ST 170 REM Set up timer interrupt.
RJ 180 HI=INT(START/256):LO=START-(HI*256
   )
NR 190 POKE 528,LO:REM VTIMR1 VECTOR LOW
AJ 200 POKE 529,HI:REM VTIMR1 VECTOR HI
IS 210 POKE 53761,0:REM VOLUME TO ZERO
JC 220 POKE 53760,255:REM FREQ OF TMR1
JX 230 POKE 53769,255:REM TURN ON TIMERS
UE 240 POKE 16,193:REM SET TMINT1
LP 250 ? "Done...":? :? "Next:":? :? "LOA
   D the program to be Profiled.":?
OV 260 ? :? "ENTER ";CHR$(34);"D:PROFILE2
   .LST";CHR$(34):?
SN 270 ? :? "RUN"
```

LISTING 2

```
DR 1 REM BASIC PROFILER, PART II
     XE REVISION BY ERIC WOODRUFF
     (c) 1989, ANTIC PUBLISHING
GP 2 X=USR(ADR("h[illegible]")):REM CLEAR EXTR
   A RAM
QC 3 POKE 1278,1:REM START PROFILING.
VT 31765 POKE 1278,0:REM STOP PROFILING
OA 31766 ? "Done...":? :? "Next:":? :? "R
   UN ";CHR$(34);"D:PROFILE3.BAS";CHR$(34
   )
```

LISTING 3

```
US 10 REM BASIC PROFILER, PART 3
JH 20 REM BY STAN LACKEY
LC 30 REM XE REVISION BY ERIC WOODRUFF
IF 40 REM (c) 1989, ANTIC PUBLISHING
BC 50 REM
II 60 POKE 1278,0:GRAPHICS 0:POKE 710,146
   :POKE 712,146
YR 70 POKE 559,0:RESTORE 80:FOR I=39424 T
   O 39655:READ A:POKE I,A:NEXT I
SN 80 DATA 104,104,133,223,133,221,104,13
   3,222,133,220,104,104,133,207,173,1,21
   1,133,208,169,0,133,218,133,219
VU 90 DATA 133,214,133,215,165,218,133,20
   3,165,219,10,24,6,203,105,0,201,64,176
   ,4,160,0,240,18,201,128
AB 100 DATA 176,4,160,1,208,10,201,192,17
   6,4,160,2,208,2,160,3,41,63,9,64,133,2
   04,152,10,10,24
RL 110 DATA 105,193,141,1,211,160,1,177,2
   03,208,6,136,177,203,240,93,200,177,20
   3,133,227,197,215,144,84,208
HV 120 DATA 7,136,177,203,197,214,144,75,
   160,0,177,203,133,226,165,219,133,225,
   165,218,133,224,165,208,141,1
BZ 130 DATA 211,165,220,133,205,165,221,1
   33,206,160,0,177,205,197,224,208,7,200
   ,177,205,197,225,240,33,169,4
NZ 140 DATA 24,101,205,133,205,144,2,230,
   206,160,0,169,255,209,205,208,222,200,
   209,205,208,217,162,3,181,224
EF 150 DATA 149,212,202,16,249,165,208,14
   1,1,211,230,218,208,4,230,219,48,3,76,
   30,154,160,3,185,212,0
ZU 160 DATA 145,222,136,16,248,165,222,24
   ,105,4,133,222,144,2,230,223,198,207,2
   40,3,76,20,154,96
NN 170 REM ANALYSIS STRING: 4 BYTES PER E
   NTRY
QL 180 REM LO, HI BYTE OF COUNTER,
ZU 190 REM LO, HI BYTE OF COUNT.
QN 200 REM
IQ 210 DIM ANL$(1023),YN$(1)
VQ 220 ANL$(1)=CHR$(255):ANL$(1023)=CHR$(
   255):ANL$(2)=ANL$
IE 230 TRAP 230:POKE 559,34:? "[illegible]   Profil
   er Bottleneck Analysis":? :?
BZ 240 ? "How many bottlenecks do you wan
   t":? "to see (1-255)";:INPUT NUM
OF 250 IF NUM<1 OR NUM>255 THEN 240
AZ 260 ? :? "Are you sure (Y/N)":INPUT YN
   $
JR 270 IF YN$<>"Y" AND YN$<>"N" THEN 260
ET 280 IF YN$<>"Y" THEN 230
OR 290 ? :? "During analysis, the screen
   will be   blank to speed up calculatio
   n.":?
UV 300 TMIN=INT((NUM/255)*485)+1:IF TMIN<
   60 THEN TSEC=TMIN:TMIN=0:GOTO 320
GX 310 TSEC=TMIN-INT(TMIN/60)*60:TMIN=INT
   (TMIN/60)
SE 320 ? "Estimated time (M:SS): ";TMIN;"
   :";TSEC
```

```
UE 330 ? :? "     ** PRESS START TO ANALYZE **"
XR 340 IF PEEK(53279)<>6 THEN 340
GI 350 POKE 559,0:X=USR(39424,ADR(ANL$),NUM)
HQ 360 POKE 559,34:POKE 752,1:? "ANALYSIS COMPLETE."
DS 370 TC=0:FOR I=1 TO NUM*4 STEP 4
IX 380 POSITION 2,2:? "TOTAL COUNTS:";TC
JU 390 CT=ASC(ANL$(I+2,I+2))+ASC(ANL$(I+3,I+3))*256
TR 400 TC=TC+CT:IF CT<>0 THEN NEXT I
OA 410 TRAP 410:? "Report on screen or printer (S/P)";:INPUT YN$
CP 420 IF YN$<>"S" AND YN$<>"P" THEN 400
EX 430 IF YN$="P" THEN LPRINT "TOTAL COUNTS:";TC:LPRINT "LINE","COUNT","PERCENT","CUML %"
WT 440 IF YN$="S" THEN PRINT "LINE","COUNT","PERCENT","CUML %"
IZ 450 CUM=0:FOR I=1 TO NUM*4 STEP 4
HG 460 LN=ASC(ANL$(I,I))+ASC(ANL$(I+1,I+1))*256
JR 470 CT=ASC(ANL$(I+2,I+2))+ASC(ANL$(I+3,I+3))*256
WY 480 IF CT=0 THEN 540
TV 490 PCT=CT/TC:CUM=CUM+PCT
NY 500 Y=(INT(0.5+10000*CUM))/100
PJ 510 X=(INT(0.5+10000*PCT))/100
BI 520 IF YN$="S" THEN PRINT LN,CT,X,Y
XK 530 IF YN$="P" THEN LPRINT LN,CT,X,Y
MH 540 NEXT I:POKE 752,0:END
```

LISTING 4

```
PX 10 REM BASIC LOADER FOR PROFILE2.LST
JH 20 REM BY STAN LACKEY
GD 30 REM (c) 1985,1988 ANTIC PUBLISHING
EV 40 REM (LINES 10-250 MAY BE USED WITH OTHER BASIC LOADERS IN THIS ISSUE.
IJ 50 REM CHANGE LINE 70 AS NECESSARY.)
PR 60 DIM FN$(20),TEMP$(20),AR$(93):DPL=PEEK(10592):POKE 10592,255
WO 70 FN$="D:LINES.LST":REM THIS IS THE NAME OF THE DISK FILE TO BE CREATED
RD 80 ? "Disk or Cassette?";:POKE 764,255
PY 90 IF  NOT (PEEK(764)=18 OR PEEK(764)=58) THEN 90
TH 100 IF PEEK(764)=18 THEN FN$="C:"
VB 110 POKE 764,255:GRAPHICS 0:? "      ANTIC'S GENERIC BASIC LOADER"
MY 120 ? ,"BY CHARLES JACKSON"
KB 130 POKE 10592,DPL:TRAP 200
PU 140 ? :? :? "Creating ";FN$:? "...please stand by."
LW 150 RESTORE :READ LN:LM=LN:DIM A$(LN):C=1
BQ 160 AR$="":READ AR$
YC 170 FOR X=1 TO LEN(AR$) STEP 3:POKE 752,255
DM 180 LM=LM-1:POSITION 10,10:? "(Countdown...T-";INT(LM/10);")    "
BK 190 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+1:NEXT X:GOTO 160
MM 200 IF PEEK(195)=5 THEN ? :? :? "TOO MANY DATA LINES!":? "CANNOT CREATE FILE!":END
CM 210 IF C<LN+1 THEN ? :? "TOO FEW DATA LINES!":? "CANNOT CREATE FILE!":END
UQ 220 IF FN$="C:" THEN ? :? " Prepare cassette, press [RETURN]"
AR 230 OPEN #1,8,0,FN$
PV 240 POKE 766,1:? #1;A$;:POKE 766,0
AL 250 CLOSE #1:GRAPHICS 0:? " COMPLETED "
JH 1000 DATA 82
MF 1010 DATA 0500320880610850830820400650680820400341041690031332051740012111652050100100241051931410012 11
BU 1020 DATA 1600001690641332041521332031452032302032082502302040162461982050162231420012110960340410 41058
PX 1030 DATA 08206907703206707606906508203206908808408206503208206507 7155
```

EASIEST ROUTE TO YOUR DISK CONTENTS

QUICK DIRECTORY

Article on page 22

Article on page 22

LISTING 1

Don't type the TYPO II Codes!

```
NS 0 REM SAVE"D:QDIRMAK.BAS"
SE 10 DIM J$(10)
ZH 20 GRAPHICS 0:? "Quick Directory, by Mat*Rat"
AY 30 ? "(c) 1989, Antic Publishing"
ZA 40 ? :? "Get disk in Drive 1 ready"
PB 50 ? "and press RETURN ";:INPUT J$:? :?
AJ 60 RESTORE
VF 70 TRAP 80:OPEN #1,8,0,"D:QDIR":GOTO 90
JC 80 ? "Couldn't create D:QDIR.":? "ERROR ";PEEK(195):END
VP 90 REM ? #1;"10 ";
CT 100 ? #1;"CLR:DIM A$(153):A$(1,100)=";CHR$(34);
XT 110 FOR I=1 TO 100
KT 120 READ A:? #1;CHR$(A);
FX 130 NEXT I
DF 140 ? #1;CHR$(34);CHR$(155);
GA 150 REM ? #1;"20 ";
LL 160 ? #1;"A$(101,153)=";CHR$(34);
BL 170 FOR I=101 TO 153
LF 180 READ A:? #1;CHR$(A);
GJ 190 NEXT I
OM 200 ? #1;CHR$(34);":? ";CHR$(34);"Dir Spec ";CHR$(34);";:A=USR(ADR(A$))"
LA 210 CLOSE #1
TT 220 ? :? "Done."
HM 230 ? "Try E.";CHR$(34);"D:QDIR"
NA 240 ? "to get a quick directory"
UZ 250 ? "listing now!":? :? :?
RQ 260 ? :? "E.";CHR$(34);"D:QDIR";CHR$(28);CHR$(28);CHR$(28):END
AH 270 DATA 104,240,6,170,104,104,202,208
TS 280 DATA 251,162,0,169,11,141,66,3
SK 290 DATA 142,72,3,142,73,3,169,63
TY 300 DATA 32,86,228,169,5,141,66,3
GQ 310 DATA 169,4,141,69,3,142,68,3
FI 320 DATA 169,40,141,72,3,32,86,228
CR 330 DATA 162,80,169,12,157,66,3,32
US 340 DATA 86,228,169,3,157,66,3,169
SY 350 DATA 4,157,69,3,169,0,157,68
DK 360 DATA 3,169,6,157,74,3,169,128
EK 370 DATA 157,75,3,32,86,228,48,55
MO 380 DATA 162,80,169,0,157,68,3,157
VH 390 DATA 73,3,169,4,157,69,3,169
BO 400 DATA 40,157,72,3,169,5,157,66
BS 410 DATA 3,32,86,228,48,25,162,0
GT 420 DATA 169,4,141,69,3,142,68,3
DV 430 DATA 169,40,141,72,3,169,9,141
YR 440 DATA 66,3,32,86,228,16,201,162
GM 450 DATA 80,169,12,157,66,3,76,86
FD 460 DATA 228,-1
```

LISTING 2

```
0 ;SAVE#D:QDIR.M65
10 ;ASM,#-,#D:QDIR.OBJ
20 ;ASM,#-,#D:QDIR.COM
30 ;
40 OBJECT = 1
50 COM    =  2
60 CODE   =   OBJECT
70 ;
80 ; Set CODE equal to OBJECT
90 ; to create an object file
0100 ; to be used from a BASIC
0110 ; USR routine.
0120 ; Set CODE equal to COM to
0130 ; make a stand alone .COM
0140 ; file for use with Sparta
0150 ; or any other DOS.
0160 ;
0170 ;
0180 ; Quick Directory by Mat*Rat
0190 ; Ratware Softworks
0200 ; (c) 1989, Antic Publishing
0210 ;
0220 ; A quick and dirty utility
0230 ; for getting a complete
0240 ; directory listing while in
0250 ; Atari BASIC.
0260 ; The BASIC program QDIRMAK.BAS
0270 ; will create a the file:
0280 ; D1:QDIR.
0290 ;
0300 ; From BASIC immediate mode .
0310 ; use the command:
0320 ;
0330 ; E."D:QDIR
0340 ;
0350 ; The user will be prompted for
0360 ; a directory specification,
0370 ; and a DIR will be displayed.
0380 ; If it's a SpartaDOS disk,
0390 ; the directory will be listed
0400 ; in LONG format.
0410 ;
0420 XCORD = $55
0430 YCORD = $54
0440 SAVMSC = $58
0450 STRING = $FC      ;String ptr
0460 FILEBUF = $0400  ;Cas buffer
0470 CIO =     $E456  ;CALL OS HERE
0480 ICCOM = $0342    ;COMMAND TO CIO
0490 ICBADR = $0344   ;BUFFER OR FNAME
0500 ICBLEN = $0348   ;BUFFER LENGTH
0510 ICAUX1 = $034A   ;AUX BYTE #1
0520 ICAUX2 = $034B   ;AUX BYTE #2
0530 ;
0540 COPN =   3       ;COMMAND OPEN
0550 CCLOSE = 12      ;COMMAND CLOSE
0560 CGTXR = 5        ;GET TEXT REC
0570 CPTXR = 9        ;PUT TEXT REC
0580 CGBINR = 7       ;GET BINARY REC
0590 CPBINR = 11      ;PUT BINARY REC
0600 CDRAW = 17       ;COMMAND DRAWTO
0610 CFILL = 18       ;COMMAND FILL
0620 ;
0630 OPIN =   4       ;OPEN FOR INPUT
0640 OPOUT = 8        ;OPEN FOR OUTPUT
0650 OPDIR = 6        ;OPEN FOR DIR
0660 ;
0670 ; A=USR(ADR(QDIR$),ADR("D1:*.*"))

0680 ;
0690 ; QDIR$ holds the code that follo
ws.
0700 ; It pulls the address of the
0710 ; directory specification string
0720 ; off the stack. It allows the us
er
0730 ; to enter a file specification,
0740 ; such as D2:*.BAS, which is then

0750 ; used for a directory listing.
0760 ;
0770      .ORG $3400
0780      .OPT OBJ
0790      .IF CODE=OBJECT
0800 BEGIN
0810      PLA
0820      BEQ GETDRV
0830 ; Clean up unecessary
0840 ; parameters and continue
0850      TAX
0860 CLEAN
0870      PLA
0880      PLA
0890      DEX
0900      BNE CLEAN
0910      .ENDIF
0920 GETDRV
0930 ; Show only a question mark
0940 ; as a prompt for file spec
0950 ; No room for more in the code.
0960      LDX #0
0970      LDA #CPBINR
0980      STA ICCOM
0990      STX ICBLEN
1000      STX ICBLEN+1
1010      LDA #'?
1020      JSR CIO
1030 ; Accept the user's file
1040 ; specification.
1050      LDA #CGTXR
1060      STA ICCOM
1070      LDA # >FILEBUF
1080      STA ICBADR+1
1090      STX ICBADR
1100      LDA #40
1110      STA ICBLEN
1120      JSR CIO
1130 ; FILEBUF now contains
1140 ; the text file spec
1150 ; to use as a template
1160 ; for the directory
1170 ; listing.
1180 GOTDRV
1190      LDX #$50
1200      LDA #CCLOSE
1210      STA ICCOM,X
1220      JSR CIO
1230      LDA #COPN
1240      STA ICCOM,X
1250      LDA # >FILEBUF
1260      STA ICBADR+1,X
1270      LDA #0
1280      STA ICBADR,X
1290      LDA #OPDIR
1300      STA ICAUX1,X
1310      LDA #128
1320      STA ICAUX2,X
1330      JSR CIO
1340      BMI CLOSEDRV
1350 GETFIL
1360      LDX #$50
1370      LDA #0
1380      STA ICBADR,X
1390      STA ICBLEN+1,X
1400      LDA # >FILEBUF
1410      STA ICBADR+1,X
1420      LDA #40
1430      STA ICBLEN,X
1440      LDA #CGTXR
1450      STA ICCOM,X
1460      JSR CIO
1470      BMI CLOSEDRV
1480      LDX #0
1490      LDA # >FILEBUF
1500      STA ICBADR+1
1510      STX ICBADR
1520      LDA #40
1530      STA ICBLEN
1540      LDA #CPTXR
1550      STA ICCOM
1560      JSR CIO
1570      BPL GETFIL
1580 CLOSEDRV
1590      LDX #$50
1600      LDA #CCLOSE
1610      STA ICCOM,X
1620      JMP CIO
1630        .IF CODE=COM
1640        *=  $02E0
1650        .WORD GETDRV
1660        .ENDIF
```

Tech Tips

XY COORDINATES TO SCREEN MEMORY

Tech Tips regular Greg Vozzo of Brightwaters, New York shows how to convert X-Y coordinates (such as those used in PLOT, DRAWTO, etc.) into screen memory locations used by PEEK and POKE. Type RUN to start the program, which will fill screen memory (and thus the screen) with 0s.

To RUN the second part of the program, type GOTO 50. This POKEs a 0 into screen memory, converts the location into X-Y coordinates, and then prints an A there. The third section of the program is run by typing GOTO 200. This will print HELLO at the designated X-Y coordinates and then overwrite the word by POKEing 0s into the appropriate screen memory locations.

Don't type the TYPO II Codes!

```
GK 10 GRAPHICS 0:REM TEXT MODE 0
UM 20 A=PEEK(88)+PEEK(89)*256:REM A = TOP
   OF SCREEN MEMORY
DX 30 FOR I=0 TO 959:POKE A+I,16:NEXT I:R
   EM ZEROES WILL FILL SCREEN MEMORY
YS 40 END
EL 50 GRAPHICS 0:A=PEEK(88)+PEEK(89)*256:
   POKE A+156,16:REM PUT A 0 INTO SCREEN
   MEMORY, 156 PLACES FROM THE TOP OF IT
LZ 60 Z=40:REM # OF COLUMNS IN MODE 0.
ZL 70 Y=INT(156/Z):REM 156=POS. OF THE 0
YL 80 X=156-(Y*Z):REM EXTRACT REMAINDER
YS 90 FOR P=1 TO 750:NEXT P:REM PAUSE
HW 100 POSITION X,Y:? "A":REM PUT AN "A"
   HERE
NS 110 END
SZ 200 GRAPHICS 0:A=PEEK(88)+PEEK(89)*256
   :X=10:Y=10:Z=40:POSITION X,Y:? "HELLO"

EN 210 FOR P=1 TO 750:NEXT P
BO 220 FOR I=0 TO 4:REM LENGTH OF HELLO
CY 230 POKE A+((Y*Z)+X)+I,16:NEXT I:REM
   COVER UP HELLO WITH ZEROS
NZ 240 END
NA 250 REM (PARENTHESES) IN THE EQUATIONS
   CAN BE OMITTED.
```

FIVE-COLOR CURSOR TEXT

ANTIC modes 4 and 5 (same as Graphics 12 and 13) are special in that they allow four colors in a single character, and five on the whole screen. However, there is no cursor.

This program, also by Greg Vozzo of Brightwaters, New York, sets up a GRAPHICS 0 screen and changes it to a mixed screen of ANTIC modes 2, 4 and 5. The character set is altered and the screen colors are changed. Finally text is printed—and a cursor is present.

How did this happen? The redefined character set altered the SPACE character, which occupies the whole screen, into a solid block. This way, the cursor will show up in the color assigned to location 712 (background) when it overlays the solid block. In addition, the now-solid playfield is its own color, separate from the background, so a screen border is possible.

Don't type the TYPO II Codes!

```
GY 5 POKE 106,PEEK(740)-4:REM RESET RAMTO
   P AND RESERVE ROOM FOR THE CHR SET.
SV 10 GRAPHICS 0:DL=PEEK(560)+PEEK(561)*2
   56:REM FIND TOP OF DISPLAY LIST.
ES 20 POKE DL+3,68:REM SET LMS FOR TOP MO
   DE LINE TO ANTIC MODE 4
GL 30 FOR I=DL+6 TO DL+26:POKE I,4:NEXT I
   :REM SET MORE MODE LINES.
BG 40 POKE DL+19,5:POKE DL+20,5:POKE DL+2
   7,65:POKE DL+28,PEEK(560):POKE DL+29,P
   EEK(561):REM SET TWO ANTIC 5 LINES
DV 50 REM AND DEFINE THE BOTTOM OF THE DI
   SPLAY LIST. NOW SET UP CHARACTER SET:
HK 100 FOR I=0 TO 1023:POKE PEEK(106)*256
   +I,PEEK(57344+I):NEXT I:REM MOVE ROM C
   HARACTER SET INTO RAM.
SV 110 POKE 756,PEEK(106):FOR I=0 TO 7:PO
   KE PEEK(106)*256+I,255:NEXT I:REM ENAB
   LE CHR. SET & FILL ALL "SPACE" CHRS.
JD 120 POKE 712,100:POKE 710,148:POKE 711
   ,68:POKE 709,42:POKE 708,0:REM COLORS
ZP 130 ? "HELLO  HELLO ":POSITION 2,14:?
   "HELLO":POKE DL+22,2:? :? :? " USE ARR
   OW KEYS TO MOVE CURSOR AROUND "
JR 140 RESTORE :FOR I=1 TO 4:READ A:FOR J
   =PEEK(106)*256+A*8 TO PEEK(106)*256+A*
   8+7:READ B:POKE J,B:NEXT J:NEXT I
OQ 150 DATA 40,255,187,187,171,187,187,18
   7,255,37,255,171,191,171,191,191,171,2
   55,44,255,191,191,191,191,191,171,255
DM 160 DATA 47,255,171,187,187,187,187,17
   1,255
```

LINE WIPER

This short program by Mark Perez, of Fremont, California produces an impressive "line wipe" effect for erasing text from the screen. Its secret lies in the clever use of the ATASCII character set in WIPE1$ and WIPE2$. Use this routine to dress up your own programs

Don't type the TYPO II Codes!

```
VR 10 DIM MSG$(40),WIPE1$(4),WIPE2$(4)
AD 20 MSG$=" =Antic Magazine, The Atari R
   esource!= "
UA 30 WIPE1$="▏▌▐":WIPE2$="▐▌▏ "
VA 40 POKE 82,0:GRAPHICS 0:POKE 710,0:POK
   E 752,1
VF 50 FOR WIPEON=1 TO LEN(MSG$)
CV 60 FOR FX=1 TO 3:PRINT WIPE1$(FX,FX);:
   PRINT "←";:FOR D=1 TO 5:NEXT D:NEXT FX

PZ 70 PRINT MSG$(WIPEON,WIPEON);:FOR D=1
   TO 5:NEXT D
GZ 80 NEXT WIPEON
UN 90 ? "→";
FU 100 FOR WIPEOFF=1 TO LEN(MSG$)
HS 110 FOR FX=1 TO 3:PRINT WIPE2$(FX,FX);
   :PRINT "←";:FOR D=1 TO 5:NEXT D:NEXT F
   X
WQ 120 PRINT " ";:FOR D=1 TO 5:NEXT D
FP 130 NEXT WIPEOFF
DD 140 ? "↰";:GOTO 50
```

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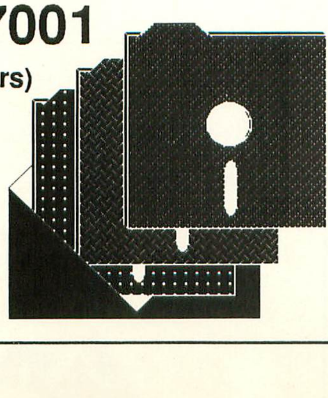
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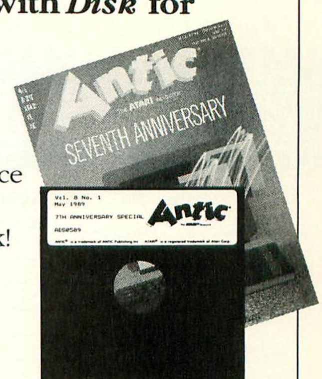
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